NPL-U7-3-241-R10
1.6

HELLER, EHRMAN, WHITE & McAULIFFE
ATTORNEYS
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

333 BUSH STREET
SAN FRANCISCO, CALIFORNIA 94104-2878
TELECOPIER (415) 772-6268
TELEPHONE (415) 772-6000

525 UNIVERSITY AVENUE
PALO ALTO, CALIFORNIA 94301-1908
TELECOPIER (415) 324-0638
TELEPHONE (415) 326-7600

2400 FOURTH & BLANCHARD BUILDING · 2121 FOURTH AVENUE
SEATTLE, WASHINGTON 98121-2317
TELEPHONE (206) 728-6900 · TELECOPIER (206) 728-0294

1300 S.W. FIFTH AVENUE
PORTLAND, OREGON 97201-5696
TELECOPIER (503) 241-0850
TELEPHONE (503) 227-7400

445 SOUTH FIGUEROA STREET
LOS ANGELES, CALIFORNIA 90071-1630
TELECOPIER (213) 612-7797
TELEPHONE (213) 689-0200

August 19, 1988

Stephen A. Lingle, Director
Hazardous Site Evaluation Division
Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
401 M. Street Southwest
Washington, D.C. 20460

Re: NPL Nomination NPL-U7-227, Pasco Sanitary Landfill

Dear Mr. Lingle:

The enclosed comments are submitted on behalf of Chemical Processors, Inc. ("ChemPro"). ChemPro is the parent company of Resource Recovery Corporation and was involved as a shareholder with the Resource Recovery industrial waste disposal facility that operated at the Pasco Sanitary Landfill ("PSL") site in the early 1970s. The Pasco Sanitary Landfill site was nominated for inclusion on the National Priorities List ("NPL") on June 24, 1988. These comments will describe the history of the site, summarize the currently available information about the risk presented by the site, describe the correct application of the HRS to this site, discuss other appropriate factors EPA should consider and conclude with a discussion of the assessment of this site under the revised National Contingency Plan ("NCP") presently under consideration with the Environmental Protection Agency ("EPA"). For the reasons set forth in this letter, ChemPro believes that it is inappropriate to list the Pasco Sanitary Landfill on the NPL on the basis of the technical data available. ChemPro also believes that there are other readily available avenues for addressing any problem that exists at this site that would conserve federal resources.

I. BACKGROUND INFORMATION

A. Landfill History. The site currently known as the Pasco Sanitary Landfill has operated as a solid waste disposal facility for approximately thirty years. In 1958, the Franklin County Planning Commission authorized John Dietrich, d/b/a Pasco Garbage Service, to establish and operate a garbage disposal facility on this site. The site was operated in conformance with accepted practice at the time as a burning landfill. Wastes

accepted included municipal solid waste and light industrial and commercial wastes. This operation occurred in an area surrounding the site later known as Zone A of the industrial disposal facility. The practice of dumping solid waste and periodically burning it continued until 1971 when the operation was converted to a sanitary landfill. Solid waste is now either compacted and covered with soil or compacted into bales, placed on-site and covered with soil. The facility still receives municipal solid waste from Benton, Franklin, and Walla Walla Counties, all of which are generally located in southwestern Washington.

B. Industry Waste Disposal Facility. In the early 1970's, ChemPro ascertained the need for an industrial waste disposal facility. A new corporation, Resource Recovery Corporation (whose logo results in the acronym CR_2), was formed to develop, permit and operate the new facility.

1. Resource Recovery Corporation Corporate History. CR_2 was organized and incorporated under the laws of the State of Washington on August 8, 1972. The original shareholders of record and their then respective addresses and percentage ownership of the original issued and outstanding shares of stock in Resource were:

Name	Address	Percentage of Ownership
John Dietrich	503 E. Washington St. Pasco, Washington	15%
Larry Dietrich[1]	420 E. Washington St. Pasco, Washington	15%
Leonard Dietrich	2124 N. Lucas St. Pasco, Washington	15%
Chemical Processors, Inc.	734 S. Lucille St. Seattle, Washington	45%
James W. Moon	2519 N. Meridian St. Olympia, Washington	10%

[1] John and Marjorie Dietrich originally operated the landfill d/b/a Basin Disposal. Their sons Larry and Leonard were shareholders in CR_2. Larry Dietrich assumed responsibility for the landfill in 1981.

CR_2 operated the industrial waste landfill on approximately 210 acres of leased land adjacent to Basin Disposal's municipal landfill. Approximately 50 acres was leased from Burlington Northern; 40 acres was leased from the Department of the Interior Bureau of Reclamation; 40 acres was leased from Tomlinson Dairy and 80 acres was leased from John and Marjorie Dietrich. All leased parcels appear to have been located in Sections 15 and 22, Township 9 North, Range 30 East of the Willamette Meridian, Franklin County, Washington. A description of the leases and license are found in Exhibit 1. The industrial waste facility comprised roughly 2.28 acres of the total site. CR_2 corporate records and information obtained from interviews with ChemPro personnel indicate that ChemPro was to provide technical and waste reclamation expertise to CR_2; Basin Disposal was to operate the landfill and disposal operations. Mr. Larry Dietrich was the on-site facility manager.

After examining several sites in Eastern Washington, the Pasco Landfill site was selected for development of the much-needed industrial waste disposal facility. The site was selected after a careful review of the geology (including both studies performed by the federal government at the nearby Hanford Reservation and specific site investigation by R.E. Brown); evaluation of the operation at the landfill; assessment of the climate and review of the characteristics of wastes likely to handled there.

A plan of operations was developed and submitted to both the local health department, the Franklin County Health Department ("FCHD") and the Department of Ecology (Ecology). A copy is attached as Exhibit 2. Many of the waste materials were sludges transported in bulk. Others were drummed. The plan contemplated evaporating sludges in both lined and unlined uncovered ponds, burial of drummed pesticide wastes in a segregated area and disposal of other drummed waste in another segregated area.

The CR_2 Plan of Operations contemplated no discharge from the evaporation ponds into which the sludges would be placed nor from the drummed waste that would be buried on site. Moisture sensors were to be installed under the evaporation ponds; test wells were installed to monitor groundwater impacts. Despite the plan of no discharge, Ecology determined that it would regulate the site by means of an Industrial Waste Discharge Permit. CR_2 applied for the permit, and, on the basis of the Operations Plan, Ecology issued an industrial waste discharge permit, Permit No. 5301 to Resource Recovery on March 21, 1973. A copy is attached as Exhibit 3.

The site operated as an industrial waste disposal facility from late 1972 when pilot disposal projects began through 1974. The pilot projects evaluated the effects of evaporation on various sludges, and were conducted with the knowledge and consent of Ecology and the FCHD. From 1972-1974, the quantities of wastes handled at the Resource Recovery facility are shown in Table 1.

TABLE 1

Drums	1972	1973	1974	Site
Paint Waste	6314	9195	8691	A
Caustic Wastes	959	3277	4538	A
Acid Wastes	85	459	----	A
2-4 D mfg. Waste	588	4492	----	B
Carcinogenics	----	9	----	A
Pesticide Containers	----	863	----	A
Aromatic Tar	----	160	----	A
Oil Sludge	----	----	433	A
Cadmium Waste	----	11	----	A
Pesticides	----	425	----	A
Metal Finishing	----	----	304	A
Gallons	**1972**	**1973**	**1974**	**Site**
Waste Cutting Oil	3000	28500	52800	D
Lime Phenol Waste	----	217724	467243	C
Metal Cleaning Waste	----	138938	46244	C
Paint Waste	----	6005	60511	D
Acids	----	6000	1000	C
Solvents	----	12648	----	D
Oily Sludges	----	11000	55340	D
Metal Finishing	----	17000	----	C
Pounds	**1972**	**1973**	**1974**	**Site**
Acid Metal Cleaning	----	490810	1810750	C
Plywood Resin Wastes	----	212520	2002920	D
Paint Wastes	----	27200	420218	D
Barium Waste w/mercury	----	5439 tons	6143 tons	E
Fertilizer Mfg. Waste	----	----	228288	D
Aromatic Tar	----	----	499270	D
Metal Finishing	----	----	1460602	C

In 1973, attention was focused on the presence of herbicide manufacturing wastes at the facility. When brought to the attention of the County Commissioners, the Commissioners determined the facility did not meet the County's zoning

ordinance. The CR_2 permit was shortened from five years to less than two and conditions were imposed on the nature of the wastes allowed to be handled at the site. As a result, Resource Recovery's industrial waste disposal operations were limited to acceptance of waste from CR_2's existing clients only; no new wastes were to be accepted until the permit expired in December 1974.

CR_2 submitted monthly reports on waste volumes to Ecology and the FCHD. These reports also documented the results of monitoring the moisture sensors beneath the ponds and the test wells on site. No leaks or discharges to groundwater were ever detected. No action was taken by Ecology to rescind the permit and, in fact, during the 1973 discussions between the Franklin County Commissions and CR_2 regarding ongoing operation of the site, Ecology indicated it would accept "full" responsibility for the "prevention of any environmental hazards resulting from the operation" pending development of a new state controlled disposal operation in a November 30, 1973 letter. Exhibit 4. (It is interesting to note that no such site has yet been developed despite the state's authority to acquire property on which such a site could be developed within the Hanford Reservation. RCW 70.105.040 and actual ownership of such a parcel). Arguably, therefore, the responsibility for any ongoing investigation or remedial action should be with the state. Ecology also investigated the site and determined that it posed no untoward environmental or human health risks. Department of Ecology, "Industrial Waste Disposal Site Evaluation," December 1973, a copy of which is attached as Exhibit 5. (This document also appears as Reference 4 to NPL listing package.)

The facility was closed under the supervision of the Department of Ecology. The closure plan was developed by Ecology and implemented by CR_2, Ecology and Mr. Larry Dietrich. The plan and subsequent related correspondence are attached as Exhibit 6. It included covering the ponds and Zone A with a sandwich of soil and polyethylene, moving the chlor-alkali sludge from the temporary unlined trenches to lined trenches, inventorying wastes received and erecting monuments over each disposal area (this requirement was subsequently replaced by a survey of disposal areas filed with the County Auditor). The site was closed according to the plan. Monitoring by Ecology after the closure revealed no air, soil, or groundwater contamination with pesticides 2,4-D or 2,4,5-T. Subsequently, Ecology relieved CR_2 of the obligation to perform additional soil and air analyses by letter dated December 20, 1979 and Ecology re-sampled groundwater in the vicinity. No contaminants were detected.

On or about January 1, 1981, CR_2 and the Dietrichs entered into an agreement in which the Dietrichs agreed to surrender all of their stock in CR_2 to the company. In exchange, CR_2 agreed to tender all of its rights in the Burlington Northern, Bureau of Reclamation, and Dietrich lease agreements to the Dietrichs. The Dietrichs agreed to assume all obligations of CR_2 under the terms of the leases. CR_2 was to be paid a depletion allowance for all material permanently disposed of on the leased property for a period of seven years. The parties also agreed that each party would share equally the cost of an insurance premium protecting all parties to the agreement from any liability relating to hazardous waste now stored on the site. Insurance was to be in the amount of not less than $1 million.

On November 8, 1983, ChemPro purchased the shares held by John Kimberly and became and remains the sole shareholder of CR_2. As of August 22, 1988, Resource Recovery is a wholly-owned subsidiary of ChemPro. Its principal place of business is 2203 Airport Way South, Seattle, Washington 98134.

Since the closure of the industrial waste disposal facility in early 1975, other activity has occurred in its vicinity. Bales of municipal solid waste were placed adjacent to the area in which drummed waste had been buried in Zone A. Eight or nine years ago, a fire broke out in that area. (Personal communication with Larry Dietrich, August 16, 1988; September 24, 1986 letter from JUB Engineers, Inc. to FCHD re: "Items for Discussion on September 25 Meeting - DOE-Benton Franklin Health District-Pasco Landfill," p. 2). Water was pumped from the on-site water supply well onto Zone A for approximately three days. Another significant discharge of groundwater also occurred in this area, consisting of a pump test of the landfill water supply near Zone A. Each of these events provided a great deal more water than ordinary precipitation or even than predictable storm events. This volume of water would probably be sufficient to overcome the normal evapo-transportation process and allow water to percolate through the ground to the groundwater table.

C. Compliance. There were no enforcement activities undertaken by Ecology or the Health Department at the Resource Recovery industrial disposal facility.

For several years after the closure of the industrial waste facility, the solid waste management facility permit for the sanitary landfill was held by Resource Recovery. No enforcement action was undertaken during the time Resource held the permit.

As described above, Mr. Larry Dietrich has operated the landfill since 1981. During his tenure as operator, several investigations and enforcement actions have occurred. First, in 1985, a contractor for EPA performed a site investigation that included installation of additional monitoring wells and analysis of groundwater samples taken from them. Several volatile organic compounds were detected. Two, tetrachloroethylene and 1,1,1 trichloroethane, were found in excess of federal proposed maximum contaminant levels. Ecology ordered Pasco Sanitary Landfill, Inc. to undertake a comprehensive monitoring program for one year. Exhibit 7, Order DE 86-E112. Subsequent enforcement action involved a penalty for failure to meet the terms of Order No. DE 86-E112. In response to Order DE 86-E112, quarterly monitoring data has been assembled which will be discussed in the next section.[2]

D. Site Investigations. The site has been investigated several times. In 1973, in response to concerns from the agricultural community, Ecology undertook an independent investigation of the Resource Recovery facility. The final report, issued in December 1973, concluded that the "Pasco site is an excellent location for ground disposal of industrial solid wastes if the proper safeguards are observed." Exhibit 5. No adverse environmental impacts from this operation are anticipated. Id., pp. 19-20.

Pursuant to state law, groundwater monitoring wells were installed by JUB Engineers, Mr. Dietrich's consultant, in January 1982. These wells were generally monitored for inorganic indicator parameters of landfill leachate until late 1986. Since 1986, these wells have been monitored for the additional compounds described in Exhibit 7. EPA and its contractor have made several assessments of the site. In 1979, Doug Hansen, Manager of EPA's Air and Hazardous Substance Program, visited the site, and concluded additional investigation should be undertaken.

A preliminary assessment of the site was conducted in 1984 as a part of EPA's nationwide dioxin investigation. This site was included because of the pesticide waste buried there. No dioxin contamination was found. The report, issued in 1985, recommended additional investigation despite no findings of

---

[2] Another problem resulted in the issuance of an order to PSL. A lagoon into which septage was pumped created operational problems. An order was issued in 1984 requiring immediate action to stop the overflow and submission of plans for a new lagoon facility. This facility is no longer in operation.

organic contaminants identified in the water and the highest concentration of inorganic contaminants in the upgradient well. Reference 17 to NPL listing package, p. 12.

Additional investigation was undertaken by Ecology and Environment (E&E), a contractor to EPA, which performed a site investigation later in 1985. More groundwater samples were taken from existing and newly installed wells on-site. Several volatile organic compounds were detected, two of which were detected at levels in excess of "Federal Drinking Water Guidelines Highest Safe Level" (not to be confused with maximum contaminant levels); these compounds are tetrachloroethylene (PERC) and trichloroethylene (TCE). At that point, PERC was found at concentrations of 32 ppb; TCE concentrations ranging from 65-420 ppb. Subsequent re-testing by E&E revealed increases in the concentrations of those two contaminants in 1986. None of the investigations have found these or other organic contaminants at wells other than those nearest Zone A; EE2, EE3 and JUB2. Off-site wells were tested in 1986. No such wells have been found in which the drinking water standards for these compounds is approached. Although reported data from three of the off-site wells -- the Old and New Yenney wells and the Bonnie Brae Trailer Park well -- indicate the presence of PERC and TCE, this data is suspect because the reported concentrations were less than the detection limits.

II. NATURE OF CURRENT THREAT

As noted in the NPL listing package, there is no threat to human health or the environment posed by this site via surface water or direct exposure. Figures 7 and 9 of HRS scoring document. All industrial waste materials are covered with at least five feet of soil and PVC liners. There is no surface water on-site. The waste cannot migrate into off-site surface water, because of the closure with soil and synthetic liners. (This closure meets the closure requirements for landfills in existence when the facility closed. See WAC 173-301.) Similarly, people cannot come into direct contact with it, for the same reason.

The air route does not provide an exposure pathway here. Ambient air quality at the site has been measured at several times over the past 16 years. No release has been detected nor would any be expected. Again, the closure of the industrial waste disposal facility effectively precludes exposure via this pathway.

It is clear that the primary focus of concern about the PSL site is exposure via the groundwater route. This concern

appears to be premised on data generated by E&E in its 1985 and 1986 sampling and JUB Engineers' subsequent sampling. It is important, however, to assess the risk posed by the contaminants found.

First, a description of the hydrology and water usage in the area is important. Groundwater is encountered beneath the site at about 55 feet below the average land surface at the site (the shallow aquifer) and at about 140 feet below the average land surface at the site (the basalt aquifer). The upper aquifer is in sedimentary material; the lower, as its name suggests, is in basalt. The flow of groundwater in both is to the southwest, toward the City of Pasco and the Columbia River.

The climate at the site is relevant to hydrology as well. The site receives roughly eight inches of precipitation each year, with most of the precipitation occurring as light rain or snow during the winter months. Given a mean annual temperature of 56°, summer daytime temperatures frequently in excess of 100°F, the annual evaporation potential is about 60 inches per year. Exhibit 5, p. 2. Precipitation is not, as a result, the driving force for any contaminants moving from the solid waste landfill or the industrial disposal facility.

Several rounds of groundwater analyses have been conducted on wells on-site. These include the wells installed by JUB Engineers numbered JUB1-5 and nine wells installed by E&E, EE#1-9. Figure 1 shows the monitoring well locations.

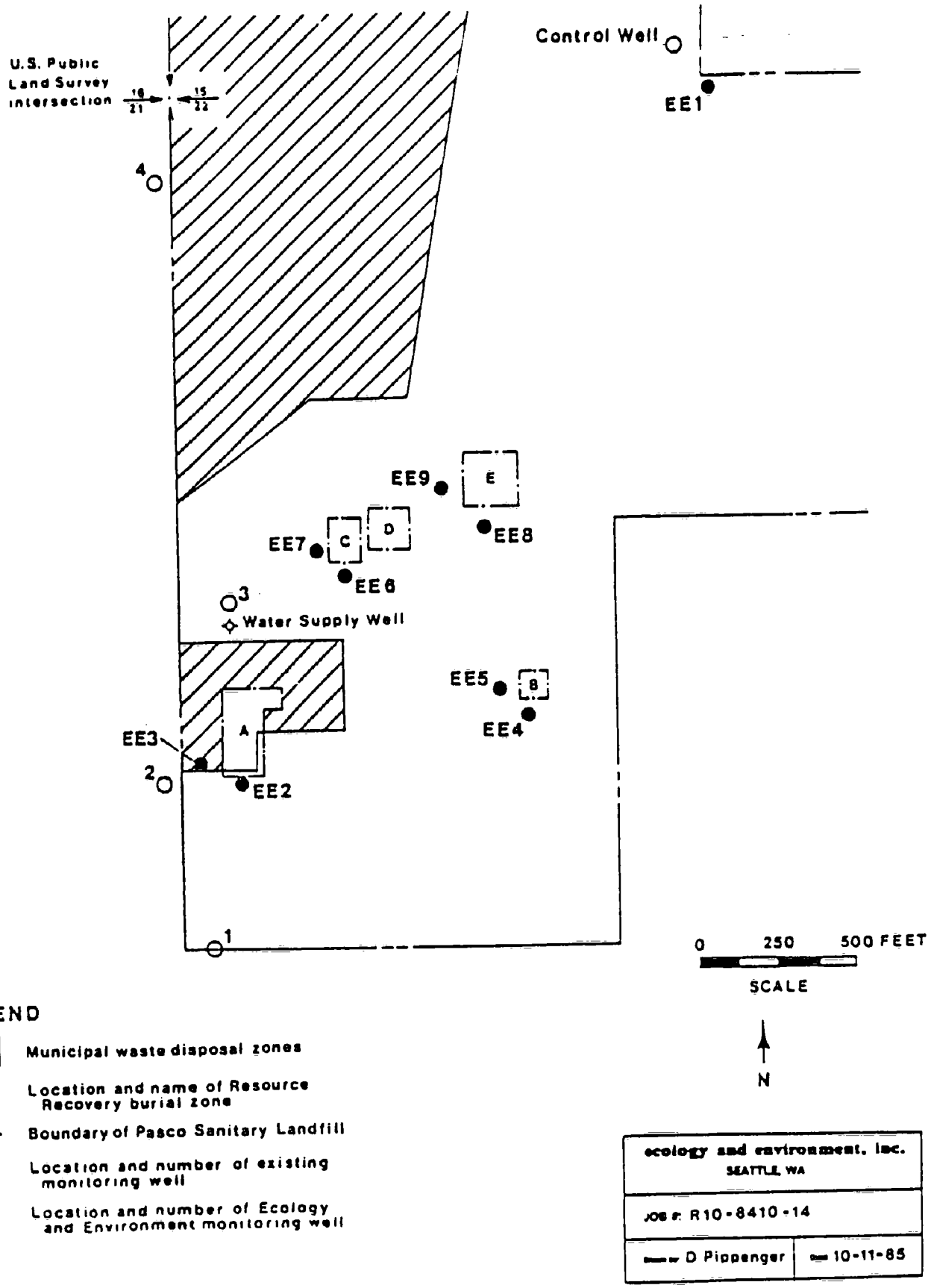


Figure 1 Monitoring well locations at Resource Recovery site, Pasco, Washington.

Initial detection of volatile organics found in July 1985 were at low levels and, as described earlier, were confined to three wells, EE2, EE3 and JUB2. Subsequent monitoring of those wells for volatile organics has shown an increase in contaminant concentrations between July 1985 and March 1987. Since March 1987, concentrations of contaminants have tended to decrease. See Exhibit 8. Concentrations of certain volatile organic compounds exceed federal standards at each of the following wells:

EE2 - trichloroethylene and tetrachloroethylene;

EE3 - trichloroethylene, tetrachloroethylene, 1,1,1, trichloroethane

Despite the detection of these compounds, there is little risk of harm to the environment or human health posed by the groundwater contamination beneath this facility. First, the water supply well on-site has been tested and is not contaminated. No one on-site is therefore exposed to unhealthful water. Second, the levels of contaminants, although significant at the source, do not pose significant risks to downgradient users, those in the path of any contaminant plume. The direction of groundwater flow at this site is well defined. The area has been studied in this and other federal contexts for many years. Because of its proximity to both the Columbia Basin Reclamation project activities and the federal reservation at Hanford, a great deal is known about this area's hydrogeology.

The nearest well in the downgradient direction is some 1600 feet from Zone A, the area closest to EE2, EE3 and JUB2. It is an irrigation well known as the Tippett well. There is only one drinking water well within one mile downgradient of the site. There are roughly fifteen within three miles. The population that uses the shallow aquifer for drinking water downgradient of the site is quite small, approximately 570. The major population cluster downgradient near the landfill is found at the trailer park located 1.25 miles from the site. This well is not located downgradient of the landfill, rather it is lateral to groundwater flow direction. One test of this well found a low level, significantly below the detection limit for tetrachloroethene. Given the distance from the landfill to this site, the direction of groundwater flow, and the common use of this compound as a solvent and degreaser, the likelihood that the landfill is the source of this material is remote.

According to EPA's own contractor, movement of the contaminants found at EE2, EE3 and JUB2 in groundwater will be affected by a number of factors including: "density of the

detected contaminants [which] will cause downward vertical migration while volatility will lead to upward movement; high soil/water partition coefficients may result in adsorption onto soils retarding migration; bacteria may decrease contaminant concentrations through biodegradation; dispersion caused by diffusion may be assumed to be negligible; recharge and the soil matrix will control horizontal and vertical groundwater advection." E&E, Final Report for Resource Recovery Corporation, Pasco Washington (TDD R10-84 10-14, June 1986), p.51. Using the first reported concentrations of TCE and PERC, E&E calculated that volatile organic concentrations would decrease to below the detection limit, 5 ug/l, within 800 feet downgradient of EE3. This is approximately 1/2 of the distance to the closest downgradient well, the Tippett irrigation well. As a result, E&E concluded "horizontal migration is not expected to be a significant problem." Id., p. 52.

E&E's calculations were based on the most current data then available. Since then, higher levels of VOCs have been detected at the three monitored wells. A model predicting contaminant transport and fate has been run on this site. Realistic, but conservative assumptions were used.

Using this conservative approach, the model considered only degradation of 50% every two years or a two year half life. The model also assumed a conservative rate of groundwater movement (i.e., more rapid than expected), resulting in a 20-26 year travel time and a predicted concentration of contaminants reaching the irrigation well 1600 feet from the landfill of 0.15-0.5 ppb. These levels are well below health-related standards and are also below detection limits. It is important to note that the primary means of removing volatile organic compounds from groundwater is air stripping. Irrigation is an air stripping mechanism.

As discussed above, the concentration trends seen at the affected wells, EE2, EE3 and JUB2 are generally downward. Modeled concentration predictions at the nearest off-site well are beneath detection limits. There is no current risk of exposure via groundwater. Future risk is, however, also a concern. This discussion will demonstrate minimal future risk of increasing concentration.

The contaminants of concern, trichloroethylene, 1,1,1 trichloroethane and tetrachloroethene have been detected only in the wells immediately downgradient of and adjacent to Zone A of the CR_2 facility. The area immediately surrounding Zone A has been the location of many sorts of waste disposal activities.

This history is significant because it suggests a remedial action of sorts has already occurred.

The Zone A area was the initial site at which municipal solid waste was placed at this site. It is shown on site diagrams as the "old fill." For thirteen years, the municipal waste flow from the surrounding cities, towns and incorporated areas was placed in Zone A and periodically burned. Significantly this waste included domestic commercial and industrial waste. When CR_2 operated the facility, drummed industrial waste was placed in Zone A. After CR_2's industrial waste disposal ceased, more municipal solid waste, in bales, was placed in the area known as the old fill. That activity continued until at least 1986.

The fingerprint of identified contaminants is similar to that found at landfills that accepted municipal solid waste in the 1960s and 1970s. It is consistent with the disposal in the landfill of wastes from dry cleaners and print shops. These businesses traditionally used chlorinated solvents and disposed of filters and other residue in their garbage cans or dumpsters. The wastes were placed in the local landfill. Technical Resources, Inc., "Draft Toxicological Profile for Tetrachlorethylene," December 1987. In at least one landfill located in eastern Washington, the Northside Landfill in Spokane, the same contaminants have been detected in groundwater and have been traced to the local dry cleaners. CH_2M Hill, "Remedial Investigation of North Landfill," October 1986, pp. 1, 43. This is especially significant because the Northside Landfill accepted no industrial waste, yet the waste profiles are almost identical.

Interviews with the landfill operator, Mr. Larry Dietrich, confirm the acceptance and disposal of dry cleaning waste at PSL. He further indicated that dry cleaning waste is not, to his knowledge, now coming into PSL. The most likely reason is the increased cost to dry cleaners of new solvents which has led to significant industry-wide recycling efforts. The most likely source of the contaminants of concern is, therefore, not being replenished. There is no reason to believe the downward trends will change.

This argument is reinforced and the contaminant plume modelling is reinforced by examination of the occurrences at the landfill in the vicinity of Zone A. Municipal garbage was placed in this area. Some eight to nine years ago, a fire erupted in the baled waste placed in this area. A large quantity of water was pumped onto the area for several days. This water volume far exceeded average annual precipitation or any sort of naturally occurring storm. It appears that the water used to extinguish

the fire travelled through the municipal waste, dissolved PERC and TCE present in dry cleaning waste and continued to move downward to the aquifer then southwest in the direction of groundwater flow. Moving at the rate postulated by E&E in its 1986 report of 40-80 feet per year, it travelled the distance between the bale fill and the affected monitoring wells, roughly 500 feet, in approximately six to seven years. This mechanism would explain the very low levels of these contaminants early on, followed by a large increase in 1985-86. The quantities measured have tended downward since 1986 as one would expect with this transport mechanism. There is no ongoing impetus to move contaminants into the groundwater, so the levels of contaminants will not increase. The groundwater contaminants noted in the vicinity of Zone A (the only area in which contaminants of concern have thus far been identified) do not match the profile of wastes placed in that area by CR_2. Those drummed wastes included acids, aromatic tars, unspecified carcinogenics, caustics, cadmium waste, metal finishing waste, oily sludges, paint, pesticides and empty pesticide containers. None of these wastes characteristically included the chlorinated solvents of concern here. The only wastes that might contribute the identified volatile organic contaminants to the groundwater are paint waste and oily sludges. According to an interview with ChemPro employee Mr. Michael Keller, paint wastes generated in the early 1970s would typically include very small quantifies of zinc, lead and chrome (1-2% of the paint itself) and solvents: mineral spirits, xylene and toluene. Oil sludges would be contaminated with polychlorinatedbiphenyls (pcbs), and gasoline (benzene, toluene and xylene). In each case, one would expect benzene, which is as mobile as xylene and toluene, to appear in groundwater in roughly the same ratio as it occurred in the waste. This has not occurred. Benzene has not been detected with the total xylene and toluene. The contaminants detected do <u>not</u> match the "fingerprints" of waste placed by CR_2. It is likely that the groundwater contamination is <u>not</u> the result of the CR_2 activity in Zone A.

The risk of environmental harm or ill effects on human health is further diminished by current monitoring efforts. Basin Disposal monitors groundwater on-site pursuant to both an administrative order from Ecology and the Minimum Functional Standards, regulations pertaining to the operation of landfills and other solid waste management facilities. These regulations are codified as ch. 173-304 of the Washington Administrative Code (WAC). Data from this monitoring is submitted to both state and local agencies charged with protecting human health and the environment. This monitoring will provide an early warning should contaminant concentration trends reverse and begin to climb.

III. RECALCULATION OF HRS SCORE

ChemPro believes that two of the HRS scores were incorrectly calculated. These are waste quantity and targets. Each will be discussed.

A. Waste quantity. The Uncontrolled Hazardous Waste Site Users Model (HW-10) gives directions on the proper application of the Hazard Ranking System ("HRS") to the facts known about a particular site. At page 19, it directs the scorer to include, in calculating the quantity of wastes present at the site "all hazardous substances at a facility (as received) except that (sic) with a containment value of zero. This standard has not been properly applied at this facility.

First, there is no evidence that the containment factor was considered. Apparently, the scorer assumed that none of the wastes received were properly contained and stored. This is inappropriate given that none of the identified hazardous substances have been detected. In fact, for example, the barium sludges were placed in lined trenches with appropriate covers. The metal finishing/cleaning wastes were also placed in lined ponds with appropriate covers. Similarly, the containers in which the pesticide and paint wastes were buried are sound and the monitoring well system in place will detect any leaks as would its predecessor moisture sensor network. (A leachate detection system is not necessary or appropriate in this acid climate and hence should not be required for the lower score.) The wastes placed in the ponds were evaporated to dryness and capped. There is no reason to expect any migration from those areas whatsoever because of the high net evaporation from this site and resultant absence of a mechanism for contaminant movement. The quantity of wastes with a containment score other than zero is, therefore, significantly less, totaling only 1492 drums. The score on this phase should be reduced from 8 to 5.

Revising the score in this matter is consistent with Congressional intent. Congress directed the agency to develop a system of criteria for determining priorities among releases or threatened releases. 42 U.S.C. §9605(a)(8)(a). The goal of this process is to identify potential remedial action and the urgency with which any such actions should be taken. Id. A realistic assessment of hazardous substance quantities likely to be released is an early step in this process as it directly affects both the appropriateness and the urgency of remedial action.

Furthermore, the users manual directs the scorer to consider the entire quantity of hazardous substances at a site.

The scoring assumes all wastes received were hazardous substances, an unwarranted assumption for at least some of the evaporated liquid wastes that were evaporated leaving only salts.

Further, it seems more appropriate to look at the released substance and to attempt to quantify it. Here, the site was scored using TCE and PERC. No data exists showing the disposal of those compounds at the CR_2 facility. Accordingly, one must look to the quantity disposed of at the landfill. Again, incomplete data is available, but it is reasonable to assume that the total quantity of PERC and TCE is less than ten tons or cubic yards, again reducing the score from 8 to 1.

Recalculating the score for waste characteristics, Item 4 on Figure 2 would result in either a 13 or a 17, which will be used to calculate S_{gw}.

B. Targets. ChemPro believes there are two significant errors in the HRS ranking with respect to groundwater targets. The first pertains to the distance to the nearest well; the second to population served.

The Users Manual indicates that distance to nearest well and population served have been combined to reflect the relationship between the distance of a population served from the hazardous substances and the number of people served by groundwater "that might be contaminated with those substances." Agency guidance has expressly rejected the idea that the distance should be calculated to the nearest downgradient well and that only the population downgradient of the hazardous substance should be counted. The rationale for rejecting that concept is that the mitre model is designed as a screening tool to be used at an early phase in site investigation. As a result, the direction of groundwater flow and other critical pieces of information are frequently unavailable when a site is scored.

Although that rationale is generally sound, it is inapplicable here. The groundwater flow direction at this site is well known. Several studies, including studies by many governments, have independently confirmed and reconfirmed flow is to the southwest. One can, therefore, more precisely identify the size of population likely to be affected by the substances as directed by the Users Manual. This approach is, in fact, encouraged by the Users Manual. It recognizes aquifer discontinuity exists and says that users beyond the discontinuity need not be counted. The example given, at p. 25, is a surface water discontinuity, but gradient is an equally well-recognized discontinuity. In fact, EPA has specifically recognized groundwater gradient as a pertinent factor in

determining the potential for contamination of groundwater with respect to municipal solid waste facilities like PSL. See 40 CFR §257.3-4(B)(1)(iii).

Properly evaluating the nearest well, i.e., looking at downgradient wells, the PSL water supply well is no longer the closest well. Instead, the nearest well is an irrigation well some 1,600 feet from the hazardous substance. This does not change the score for this factor.

A significant change in the "population served" score is appropriate. The purpose of this factor is to determine "the population at risk." Id. at 27. The population at risk is the downgradient user of domestic or irrigation water from the shallow aquifer. The actual number of groundwater users is a number between 101 and 1000, as described fully in Exhibit 9. The assigned score for population served is decreased from 5 to 2. Using the matrix on page 25 of the users manual, the score for this factor would be reduced from 40 to 20.

The other factor to be considered in the "targets" evaluation is the groundwater use category. Basically, this factor is designed to take into account the nature of the use of groundwater in the aquifer of concern. This aquifer, the shallow aquifer, is scored as a drinking water source with no other alternate unthreatened source available. This is not consistent with the facts. There are two unthreatened sources of drinking water. They are the basalt aquifer and the Pasco municipal water system. As described in Exhibit 9, there are contaminant barriers, aquitards, between the shallow and basalt aquifers, a great deal of both basalt and blue clays of very low permeability. The basalt aquifer is, in fact, another source of drinking water. In addition, the Pasco city water system is available in this vicinity although hookups would not be immediately available at each residence. This system utilizes Columbia River water. The groundwater use score should be changed to either a 2 or a 1. Since the primary use of this aquifer downgradient of PSL is irrigation, a 1 is most correct.

Using the correct numbers, the "targets" score, item 5 on Figure 2 in the NPL scoring package would be recalculated as a 23. A revised Figure 2 follows. Using the correct numbers, the new S_{gw} would be revised downward from 76.93 to 30.69. The new S_m would be 17.74, too low to list this site.

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max Score	Ref (Section)
1 Observed Release	0 (45)	1	45	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score				15	
3 Containment	0 1 2 3	1		3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 (12) 15 18	1		18	
Hazardous Waste Quantity	0 1 2 3 4 (5) 6 7 8	1		8	
Total Waste Characteristics Score			17	26	
5 Targets					3.5
Ground Water Use	0 (1) 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 (20) / 24 30 32 35 40	1		40	
Total Targets Score			23	49	
6 If line 1 is 45, multiply 1 x 4 x 5 / If line 1 is 0, multiply 2 x 3 x 4 x 5			17,545	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 30.9073		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

IV. POLICY ARGUMENTS

CERCLA was initially enacted to remedy a pervasive national problem, e.g., uncontrolled hazardous waste sites that were proliferating around the country, endangering human health and the environment. Congress directed EPA to develop a plan that would "establish procedures and standards for responding to releases of hazardous substances, pollutants, and contaminants. 42 U.S.C. §9605(a). An integral part of this plan was to be development of the National Priority List. The list was to include the highest priority sites, those that posed the greatest risk to public health, welfare or the environment. 42 U.S.C. §9605(a)(8). This is not a site that presents the level of risk and concern that justifies listing it on the NPL.

There are several approaches to the question of the risk presented by this site. Each leads to the same result. The first, discussed in preceding sections, correctly describes the risk posed by this site using the current risk ranking system, the HRS. The second looks at the risk posed from another perspective, that of the revised risk ranking system now under consideration by EPA, the revised HRS. The third argument assesses health impacts and risks if the site is closed, and the fourth and final argument, perhaps the most important, looks at whether it is necessary to use the law of last resort, CERCLA, to protect public health and the environment at this site.

The first review of the risk posed by this site is exhaustively discussed in part III of these comments. Proper application of the existing risk scoring system results in a relative risk to be assigned to this site that is significantly below the level at which national concern is justified.

The second approach is to use the new system of risk evaluation proposed by EPA and currently being reviewed inside and outside the agency. There are two significant themes throughout the proposed revisions to the NCP that should result in a different evaluation of the risk posed by the PSL. The first is a direction to assess relative, not absolute risk from the site. The second is to conserve Fund monies by considering current conditions at the site and available data rather than perform extensive investigations prior to scoring. Taken together, these factors reflect the Congressional concern that sites were not being properly evaluated prior to the enactment of SARA and the evaluation process should be altered.

The first theme, relative risk, is reflected in several changes in the proposed HRS. Most relevant to this site is the evaluation of targets. Although the target distance would increase from three miles to four under the revised HRS, determination of the exposed population would include a careful evaluation of those individuals whose drinking water has been contaminated and the level of contamination. At this site, for example, there is no documented exposure of any individual to drinking water contaminated with a hazardous substance at or near an existing proposed MCL. The nearest affected well is not a drinking water well. It is an irrigation well, so would not be scored. Three distant wells, the "new" and "old" Yenney wells and the Bonnie Brae Trailer Park well were reported to be contaminated with chlorinated solvents in concentrations below the detection limit. The wells are roughly one mile in distance from the site. There is no closer drinking water source. As a result, under the proposed revision to the HRS, the target score would be decreased significantly. This site should be considered no higher than a level 3 population group, and may be more properly classified as a level 4 group.

Second, EPA has adopted a policy of using currently available data to evaluate the risk posed by the site. The purpose of this policy is to conserve agency resources. The preamble discussing the proposed changes to the HRS reiterates this theme frequently. It does not, however, make sense to make decisions based only on the so-called preliminary information that is generated about most sites in the early phases to a site like the Pasco Sanitary Landfill which has been studied extensively. Not only has a site investigation been performed by EPA's contractor, the site owner has performed an ongoing groundwater monitoring program. A great deal of information is known about the site, not only during the time the CR_2 operation of the industrial waste disposal facility but also since then. The nature of the risk to the surrounding community and to the environment is known.

The third approach to properly assessing the risk posed by this facility is to examine what would happen if it were closed as a part of a remedial action. The Pasco Sanitary Landfill accepts municipal solid waste from incorporated and unincorporated areas in Adams County, Benton County, Franklin County, and Walla Walla County. It is operated under a permit issued by the Franklin County Health Department and is generally in compliance with that permit. In addition, at this time septage and sewage treatment plant sludge is dried on a portion of the facility and is then placed in the landfill. The landfill serve a large geographic area. It provides valuable service to both city and rural residents of the vicinity. If it

were closed, it is unclear whether other landfills in the vicinity have the capacity to properly handle and dispose of this waste. Further, it is highly likely that the rates charged for disposal would climb steeply should alternative disposal facilities be necessary. The result of increased rates will be an increase in promiscuous dumping throughout the area formerly served by PSL. This is a far more direct threat to many people than is the current, attenuating volatile organic contaminant problem. Further, the costs of closure and remedial action would be generated by user fees, the tipping fee charged to disposal companies and individuals delivering waste for disposal. The fees would undoubtedly increase dramatically, inflicting yet another burden on an economically depressed area. From this third perspective as well, the risk posed by continued operation of the site is low.

Fourth and most significantly, EPA is directed to consider "other appropriate factors" beyond those enumerated in the statute. 42 U.S.C. §9605(a)(8)(A). Perhaps the most important other appropriate factor here is the fact that this site is currently regulated under a wide range of state and federal statutes and implementing regulations. The relevant statutes include Subtitle D of the Resource Conservation and Recovery Act, 42 U.S.C. §6941 et seq., the state Solid Waste Management Act, ch. 70.95 RCW and its implementing regulations, the MFS. RCRA provides EPA authority to regulate the impacts of municipal solid waste landfills on groundwater. The state regulations implementing both state law and its delegated authority under RCRA provide similar protection. For example, WAC 173-304-460(3)(c)(B), require the facility owner or operator to take corrective whenever any leachate or waste constituents are detected that contaminate groundwater. Should Pasco Sanitary Landfill fail to meet the MFS standards, it could be compelled to close its facility. Closure of a landfill requires all activity necessary to minimize its impact on its environment and long-term maintenance and monitoring.

In addition to the minimum functional standard requirements of Washington law, the State also has all of the necessary enforcement tools under the State Clean Water Act, RCW 90.48, to ensure that the landfill does not seriously degrade water quality in the area. The combination of these statutory and regulatory authorities at the State level ensures the State an ability, through permit conditions, other regulatory action, or enforcement actions, to assure that appropriate responses are taken. In addition, the State has the authority to ensure that adequate monitoring is continued as necessary to form the necessary knowledge base to determine what responses are appropriate. Finally, the State law also contains very stringent

closure and post-closure requirements to ensure that a facility is properly closed and appropriate post-closure monitoring and maintenance is conducted.

Given the State statutory and regulatory framework, and the requirements for PSL, as an operating facility, to comply therewith, EPA can appropriately consider this authority in determining not to list the site. As set forth in 50 CFR 14117:

> In addition, as a matter of policy, EPA may choose not to use CERCLA to respond to certain types of releases because other authorities can be used to achieve cleanup of these releases.

EPA has chosen to exercise this discretion not to utilize CERCLA when other appropriate authorities can achieve the same purposes in several instances, the most pertinent of which relates to RCRA Subtitle C facilities. EPA has had a long history of developing policy toward the listing of facilities which are otherwise regulated under subtitle C of RCRA. See 51 Fed. Reg. 21054, 50 Fed. Reg. 14117. Facilities such as Pasco Sanitary Landfill which are currently operating pursuant to the requirements of subpart D of RCRA and other State laws, provide a close analogy to the Agency's decisionmaking with respect to RCRA subtitle C facilities. ChemPro believes that the same approach should be taken with respect to PSL as is taken with respect to a RCRA subtitle C facility, and bases this belief on the similarity of interests between the two issues.

On June 10, 1986 EPA adopted a final policy regarding RCRA facilities. This policy was based largely on the conclusion that where RCRA authority could provide adequate response to a release or potential release, it would not be necessary to utilize CERCLA funds which could be appropriate utilized at other facilities:

> The Agency agrees, however, that by addressing sites under RCRA that appear likely to be cleaned up adequately through the use of RCRA authorities, more CERCLA funds may be available for sites that cannot be addressed under RCRA. This is one of the purposes of the policy announced today.

51 Fed. Reg. 21059. Further, EPA agrees that "where such other authorities exist, and the federal government can undertake or enforce cleanup pursuant to particular established programs, listing on the NPL to determine the priority or need for

response under CERCLA may not be appropriate." 51 Fed. Reg. 21056. 42 U.S.C. §6945 provides the federal government with authority to eliminate health hazards and minimize potential health hazards at MSW facilities. Furthermore, the State, pursuant to its delegated authority, has the authority to undertake or enforce cleanup as set forth above.

EPA has recently reaffirmed and expanded the other authorities at which it will look when determining whether it is necessary to invoke its CERCLA authority. In a memo from J. Winston Porter, Deputy Administrator to the Administrator of EPA transmitting the proposed revisions to the National Contingency Plan, this reaffirmation is clearly stated. At page 9, Mr. Porter states:

> EPA has decided that, as a matter of policy, the NPL generally should include only those sites that appear to warrant CERCLA remedial action and cannot be addressed under other regulatory authorities. EPA has, in the past, deferred listing of sites on the NPL when certain other authorities were found to exist that were capable of accomplishing the necessary corrective action. This was, however, limited to specific Federal authorities (e.g., RCRA Subtitle C). EPA proposes to extend this deferral approach to other Federal and State authorities and their implementing programs.

There are two primary reasons for EPA's expansion of its use of listing deferrals to appropriate State and Federal authorities:

- By deferring to other authorities, a maximum number of potentially dangerous hazardous waste sites can be addressed, and EPA can use Fund money at sites where cleanup cannot be achieved by other means.

- EPA believes that it should not supersede the authorities of other Federal and State agencies, unless those authorities are unable to clean up a site.

Thus, it is clear that CERCLA is not the only authority that can effectuate remedial action should it prove necessary. Indeed, in addition to the previously discussed statutes, there is another state authority which, when properly considered,

should eliminate the need for giving this site a high priority. Ch. 70.105B RCW creates a state hazardous waste cleanup program. It closely follows the federal program in goals and methods of effecting cleanups and includes a tax so that no Superfund monies would need to be expended on this relatively low-risk site. This law, enacted in October 1987, is not yet fully implemented. The statute is clearly applicable to this site. It is logical for EPA to allow the state an adequate period of time within which to develop the implementing regulations and to take action on this site. The delay could not be lengthy as Ecology has been adopting regulations under a statutory deadline.

It is not necessary to list this site on the NPL. Consistent with both pre- and post-SARA national policy, other authorities are available to compel investigation and remediation of this problem.

V. CONCLUSION

ChemPro, as the parent company of Resource Recovery Corp., therefore believes that appropriate application of the HRS ranking system would demonstrate that the Pasco Sanitary Landfill does not qualify for inclusion on the NPL. In addition, other appropriate factors that should be considered by the EPA in reaching a decision as to whether to put Pasco Sanitary Landfill on the NPL list would also indicate that such a listing should not be made.

Very truly yours,

HELLER, EHRMAN, WHITE & McAULIFFE

Leslie C. Nellermoe

LCN:sll

Enclosures

EXHIBITS

1. Leaseholds and License

2. Plan of Operation

3. Industrial Waste Discharge Permit

4. Letter from Ecology Director Biggs to Chair, Franklin County Commissioners

5. Washington Department of Ecology, "Industrial Waste Disposal Site Evaluation," December 1973

6. Closure plan and relevant correspondence

7. Order DE 86-E112

8. March, April 1988 correspondence from Technico & Enviro Services Co. to Ecology including groundwater data

9. August 22, 1988 letter from Steve Sagstad, Senior Hydrogeologist, Sweet, Edwards/EMCON to Leslie Nellermoe regarding population, groundwater modelling

EXHIBIT 1

EXHIBIT 1
Resource Recovery Leases and License

A. Burlington Northern Lease.

Resource entered into a ten year lease with Burlington Northern Inc. ("BNI") effective May 21, 1973, to "enter upon and construct, operate and maintain pipelines, canals or laterals, including the banks thereof, and to dump waste materials, in connection therewith, upon the land described [in the lease]." A specific provision in the lease limits the landfill operation to a sanitary landfill and garbage and refuse disposal. The lease requires Resource to indemnify BNI from any loss incurred as a result of Resource's failure to comply with all federal, state, and local laws "now in effect, or hereinafter to be enacted and effective during the term of this lease" relating to all activities of Resource. Resource also agreed to indemnify BNI for all liabilities incurred by BNI as a result of Resource's operations on the leased property. The lease required Resource to restore the premises by filling excavations and reestablishing a permanent vegetative ground cover. In any event, the elevation of the site upon termination of the lease was not exceed "the 450 foot contour." In other words, waste in place and covered could not reach an elevation above 450 feet above sea level. The property subject to the BNI lease was located in Section 15 of Township 9, specifically the southwest quarter of southwest quarter (SW1/4 of the SW1/4) and south half of south half of southeast quarter of southwest quarter (S1/2 of the S1/2 of the SE1/4 of the SW1/4) of that section. Assignment of the lease required the written consent of BNI.

b. Department of the Interior Bureau of Reclamation License Agreement.

Resource entered into a ten year license agreement with the Bureau of Reclamation ("BOR") effective March 30, 1973 which granted Resource license to use the leased property as a sanitary landfill, for chemical waste disposal and reclamation and related purposes in conjunction with adjacent property which it owns or controls." The license agreement contains standard language with respect to removal of all buildings and structures at the termination of the agreement. CR_2 had the obligation to compact and cover its sanitary landfill waste material "no less often than daily," to take appropriate measures to prevent air and water pollution, and to comply with all regulations applicable to the proper operation of the facility. CR_2 agreed to fully indemnify BOR for all claims arising out of or connected with its operations and activities on the leased property. The property subject to the BOR lease was located east of the property leased from the Dietrichs in Section 22 of township 9, specifically the northeast quarter of northwest quarter (NE1/4 of the NW1/4) and

that portion of the southeast quarter of the northwest quarter (SE1/4 of the NW1/4) of that section. Assignment of the lease required the written consent of BOR.

c. Dietrich Lease of Real Property and Equipment.

Resource entered into a lease agreement with John and Marjorie Dietrich on or about January 1, 1973 covering certain real property and several pieces of equipment used in the disposal operations. The lease was for a term of five years commencing on January 1, 1973 and ending on January 1, 1978. The agreement provided that CR_2 would be paid a ten percent markup on all collection, storage, retention, landfill or disposal services provided as part of the operation of the facility on the property. The lease made no provision for allocation of liabilities as between CR_2 and the Dietrichs, including environmental liabilities, arising from industrial waste landfill operations on the site. The property subject to this lease lies west of the BOR land in Section 22. (The exact legal description is illegible in the Resource file copy of this lease.) This lease contains no assignment restrictions.

EXHIBIT 2

RESOURCE RECOVERY CORPORATION

OPERATIONAL PLAN

August 28, 1972

CONTENTS

PURPOSE

The purpose of this plan is to gather into one document the maximum data required to achieve full and continued compliance with company approved waste management practices as are required to meet local, state and Federal laws, rules or regulations or company imposed standards where the latter are more demanding, to place responsibility for the plans as concerns preparation, approval, implementation and compliance and to act as a vehicle with which to exercise centralized control of Waste management activities within the Corporation, Basin Disposal Co. and Chemical Processors, Inc.

AUTHORITY

The authority for the publication of this plan is the Board of Directors, Resource Recovery Corporation. The contents of the plan are binding upon the Corporation, Basin Disposal Company and Chemical Processors, Inc., upon approval by the Board of Directors of each.

Site operations as envisioned herein are in compliance with Franklin County ordinances, Washington State RCW 70-95 and are being conducted so as to meet or surpass the June 1, 1972 draft of State proposed Minimum Functional Standards or other proposed county or state rules, or regulations known to be in process and the details of which are available.

The provisions of the Washington State Solid Waste Management Plan as submitted to the U. S. Environmental Protection Agency of this year have been carefully considered in the preparation of this plan to insure maximum capability.

DEFINITIONS

The intended meaning of words, terms or phrases used herein is identical to those listed in the "Definitions" portion of RCW 70.95 and the June 1, 1972 draft of the proposed (WAC 173-301) Minimum Functional Standards. In some instances a more precise definition has been necessary to provide for the more detailed treatment of a subject. These terms are further defined as follows:

SOLID WASTE - includes all liquid wastes which cannot properly be discharged direct to ground water sources.

ORGANIZATION

The responsibility for the various actions required to make this plan effective in terms of its purpose is as indicated below:

Approval. Accomplished by a majority vote of the Board of Directors, Resource Recovery Corporation, Chemical Processors, Inc., and Basin Disposal Company.

Preparation. Prepared and presented to the various boards for approval by the President, Resource Recovery Corporation.

Implementation. Implementing steps are taken by the President, Resource Recovery Corporation.

Compliance. All management personnel are responsible to insure compliance through their normal supervisory activities.

OPERATIONAL SITE

The operational site is located in Sections 15 and 22, Township 9 N Range 30 E. Inclosure 1 is a site location and layout map providing more detailed data. The site is composed of 240 acres of which 78 acres are owned by Basin Disposal Company, which Company holds a lease for the balance of 162 acres.

In general, the characteristics of the site are favorable to the effective storage and disposition of wastes in full compliance with the provisions of this plan. Its location is relatively isolated, with topography ideal for screening purposes. Large quantities of backfill and other material are readily available. The Snake and Columbia Rivers are at least three miles distant. Because of topography, surface runoff has no effect on operations. The site has been in operation for more than fifteen years disposing of garbage as its main activity. However, practically all types of industrial wastes have been disposed of in small quantities. No known problems have resulted from site operations over its operational lifetime. Therefore, it should be expected to operate trouble free for many more.

However, as part of the effort to upgrade waste management functions while upgrading operational standards, investigation into the following areas is being made in accordance with other parts of this plan, so as to assure long term trouble free operation.

Ground Waters. These waters need to be investigated to determine their depth, rate of rise, if any, volume of movement beneath the site and the use of such waters downgradient from the site. These data will be useful in determining if there is need for limits on site operations in terms of quantities or kinds of wastes to be handled.

Geological Characteristics. The characteristics of the soil and underlying formations must be determined, the results of which can be related to the characteristics of the wastes expected to be encountered. Such a comparison will allow a determination as to the quantities and types of wastes that can be handled safely and without danger to the environment. Limits can be established accordingly.

Monitoring Methods. Investigation into the monitoring methods which will yield the most accurate and early assurances that operations are proceeding as expected and that calculations based on the above investigations have been accurate. Essentially, these methods are being geared tothe use of highly sensitive sensor devices and test well techniques.

CONCEPT OF OPERATIONS

Because of the investigation into ways and means of upgrading waste handling practices the concept of operations is in the nature of routine and at the same time, certain aspects are in the nature of research. For that reason, the two natures are addressed separately. In general, however, all operations are so conducted that no damage to the environment results, that such operations will not constitute a nuisance, and that such operations are economically permissible. Full compliance with the laws, rules, regulations and standards of regulatory agencies are being practiced during all operations.

Routine. Waste handling functions which can be considered as routine are the receipt and accounting of wastes received, the storage or burial, the surveillance and monitoring of the storage and burial locations to assure compliance and the overall supervision of these operations to assure that quality meets or exceeds established standards. To the extent that they apply, routine procedures will be observed during research operations.

Receipt. Receipt of wastes will be either FOB the waste producer or FOB the site. If FOB the waste producer all Department of Transportation and Operation Safety and Health rules, regulations and standards will be observed during transport to the site. If FOB the site or on arrival from FOB the waste producer, the procedures at Inclosure 2 SITE OPERATING PROCEDURES will apply.

Storage or Burial. Burial of all categories of wastes will be in accordance with SITE OPERATING PROCEDURES. Storage of wastes for later reclamation will be in accordance with the above procedures or in accordance with the research project set forth below.

Surveillance and Monitoring. Inclosure 1 lists the sensor locations and test locations to be monitored on a continual basis. Sensor locations will be monitored on a daily basis. The test wells will be monitored on a weekly basis. Results will be furnished, in addition to Company officials, to Mr. Dudley Beall, Director, Environmental Health, Benton-Franklin Health District, Richland, Washington.

Site Supervision. The operation of the site will be the responsibility of an attendant with authority to require compliance with this plan and the SITE OPERATING PROCEDURES. His specific duties and responsibilities are listed at Inclosure 3, SITE MANAGERS' DUTIES.

Research Projects. The following projects are those being performed initially. As additional projects are decided as being necessary, each will be set forth in writing in detail and become an addendum to this plan. Since each of the following projects are to utilize a pond, all will be constructed as per Inclosure 4, POND DESCRIPTION.

Plating Wastes Project. In a general sense, plating wastes contain metals suitable for reclamation purposes such as chrome salts, aluminum, copper, zinc, iron, titanium, cadmuim, silver and zinc. They do not contain mercury. However, since these wastes are usually 80 to 90% water and, on occasion, contain slight traces of hydrochloric, sulphuric, or nitric acids, it is necessary to determine (1) the degree to which the liquids will penetrate the soil under minimum head pressure (2 feet), (2) the degree to which the solids (10 to 20%) will act as self-sealers in conjunction with the high rate of evaporation, and (3) if and to what degree the contents of the soils at the site will neutralize (example, calcium carbonate) the trace acids noted above.

The concept under which this project is being undertaken is to locate a pond as per Inclosure 1 and construct it as per Inclosure 4. It is filled to a level of 2 feet and kept filled at that level until the liquid contents have evaporated and only solids remain (unless the safeguards noted below apply). Since these solids are to be processed for reclamation, retreival will be accomplished so that a cross section of the soil beneath and near the pond is analyzed to the depth of penetration of pond contents, if any. Laboratory tests will then be made of the soil at various depths to determine contamination, if any, and a determination made as to the results, if any, which might apply to the above research objectives. Since plating wastes come from various waste producers in varying quantities and since each shipment is a discharge from a particular process, care is being taken to introduce to this test only those plating wastes which by laboratory analysis meet the above requirements.

Wood Treatment Wastes Project. These wastes normally are 80 to 90% water. The balance is Pentcholorophenol contaminated with from 10 to 30% woodflour (sawdust). These wastes do not lend themselves to reclamation and would, therefore, possibly remain in the pond as a final burial location after the pond has been filled with solids (as a result of evaporation) to the safety level. The pond is then closed by filling with backfill with proper contouring to provide for waste water runoff. However, for this test the pond will be excavated at selected points down to the lowest level of penetration to determine if results contribute to any of the points noted in the Plating Waste Project. As with plating wastes, some of these wastes from time to time contain additional contaminates. Therefore, for this test only wastes meeting the above contents by laboratory analysis are being introduced to this project.

Paint Wastes Project. These wastes normally are composed of 20% water, 10% solvents, 50% resins and the balance pigments. This test is being conducted in the same manner as the above two. However, in this case, it is expected that the heavy resin content will cause an immediate self sealing effect which will allow little, if any, penetration of the soil. Therefore, substantially different results are expected of this test.

Resin Lining Project. Since reasonable quantities of resins are available for disposal as a result of reclamation and recycling processes, it is proposed that these resins be utilized as a liner to seal ponds to effectively contain all liquids not having properties affecting the resins. This category of wastes would encompass a great many of the hard to handle hazardous material. Therefore, one pond is being tested having a sprayed on resin liner. As a beginning, its contents will be the simplest and most common waste not related to the above projects. After a reasonable test period and with appropriate results, additional ponds will be prepared using upgraded data and using a material a little more difficult than the last. Eventually, and assuming favorable progress, practically all wastes will have been tested as to the feasibility of this lining application. In addition to the three points to be investigated as per the above projects, two other situations will be observed. First, the degree to which the resin lining acts as a soil stabilizer (for berms, banks, etc.) and second, its ability to hold moisture in the soil, thus increasing the impermeability rate of many properly compacted soils.

SAFEGUARDS

Sensor Locations. Sensors, as indicated by Inclosure 4, will be placed 4 to 8 feet below the floor of the pond, before compaction has been accomplished. At such time as any one or all of the snesors indicate a moisture change sufficient to indicate a penetration of the pond contents to its depth, all discharges into the pond will be stopped. As soon as evaporation has disposed of all moisture, a project soil investigation will be made. Further, steps as far as that particular pond is concerned, will be decided on the basis of the soil investigation. This same data, if applicable, will be used to suspend, alter or continue the other projects.

Test Wells. At any time the test well results indicate conclusively contaminates of the pond projects are penetrating to that degree, all projects will be suspended and investigations made as to the cause. Suspended projects will be resumed only after positive steps have been taken to prevent penetration of contaminates.

Dust Control. Projects such as these are not likely to produce dust, however, if operations should be delayed to the point where dust could eminate from a dried out pond water sprinkling will be introduced to prevent the dust from becoming wind blown.

Waterfowl Control. At certain seasons of the year, waterfowl have been known to visit any body of water. It is reasonable to assume this could happen at these ponds. In order to effectively prevent this from happening, ponds will be covered with a net arranged in a manner proven to have been fully successful in other areas in diverting waterfowl from landing on bodies of water so protected.

APPROVAL

As indication of a continuity of effort, a coordinated operation and the desire of all concerned to meet or surpass all regulatory measures now in force or known to become effective, the various Boards of Directors have this date approved this plan so affirmed by the signatures of the appropriate officers affixed hereto on this 28th day of August 1972.

CHEMICAL PROCESSORS, INC.

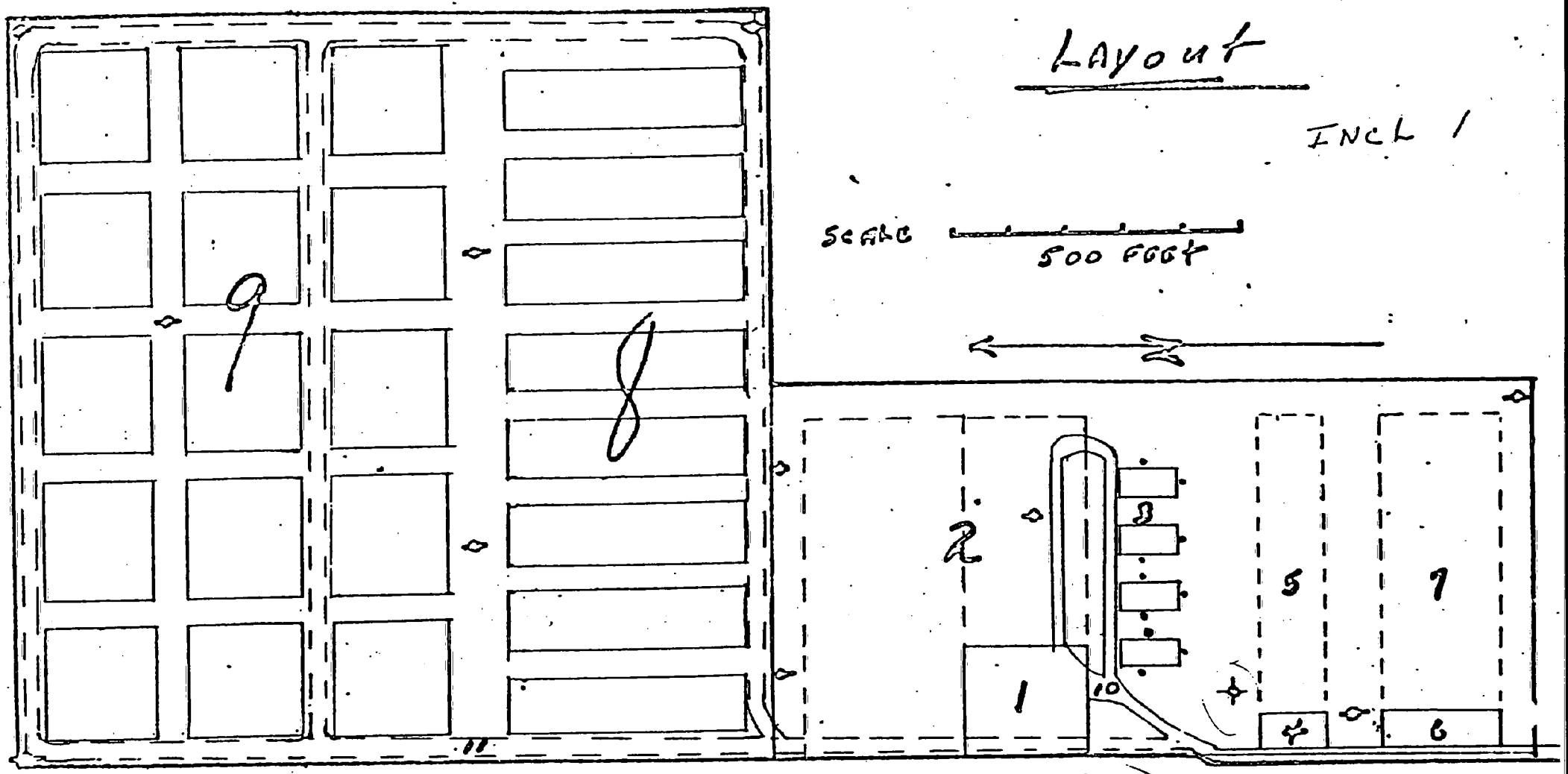
BASIN DISPOSAL COMPANY

RESOURCE RECOVERY CORPORATION

Inclosure 1. Site location map.
Inclosure 2. Site Operating Procedures. (being formalized)
Inclosure 3. Site Manager's Duties. (being formalized)
Inclosure 4. Pond Description.

Schematic Site Layout

INCL 1



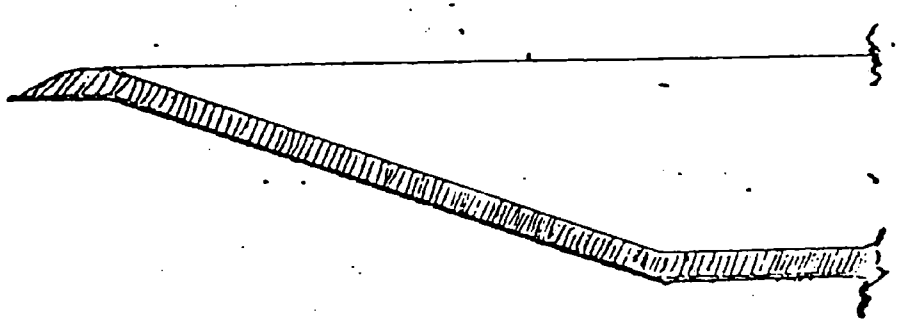
LEGEND

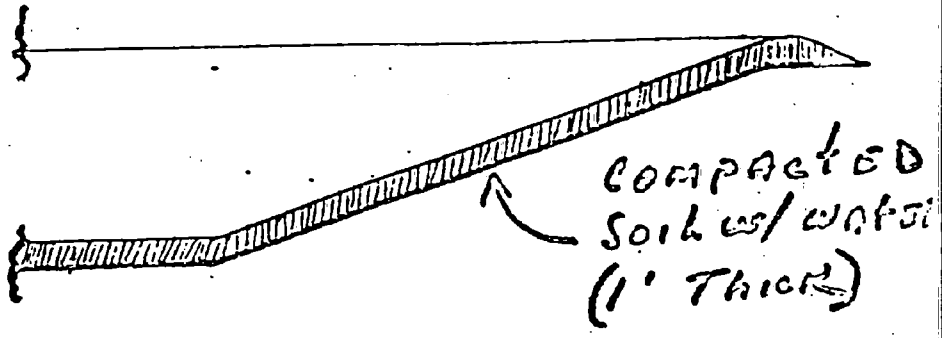
1. Present Garbage Landfill
2. Future " "
3. Present Pond Research Projects
4. " Industrial Waste Disposal
5. Future " " "
6. Present " " Storage (Dry)
7. Future Industrial Waste Storage (
8. " " " " (
9. Future " " Equip
10. Present Road System
11. Future Road System
- Present Well — Test Wells
- Soil Boring Locations

Pond Construction

Research Pond	50' x 100' x 6'	Fill level 2'-3'
Evaporation Pond	200' x 200' x 6'	" " 3'
Dam Slope	5-6 to 1	

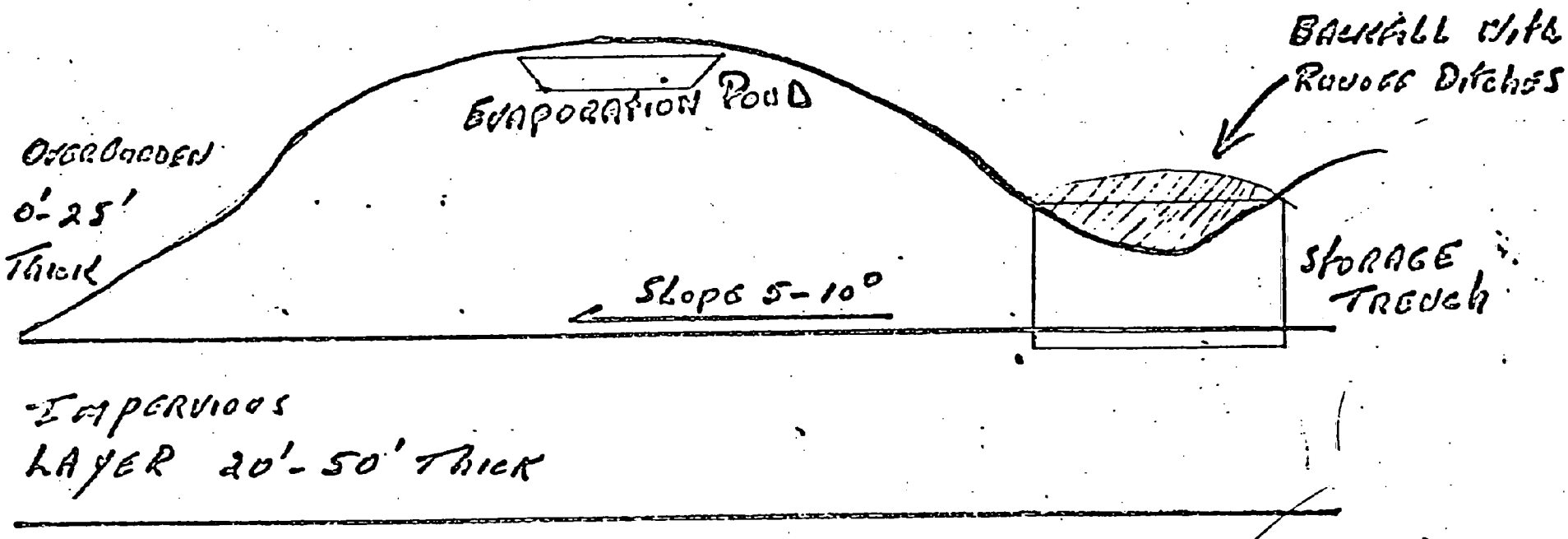
∴ Use 36' corrugated culvert (half) for pond fillers





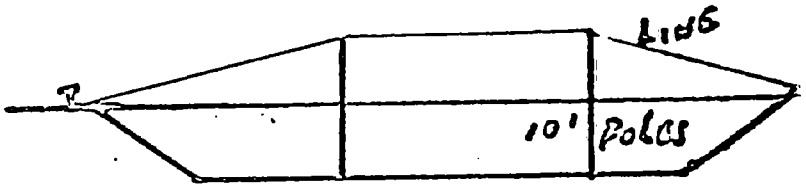
SCHEMATIC TREATMENT
OF POND AND STORAGE TRENCHES

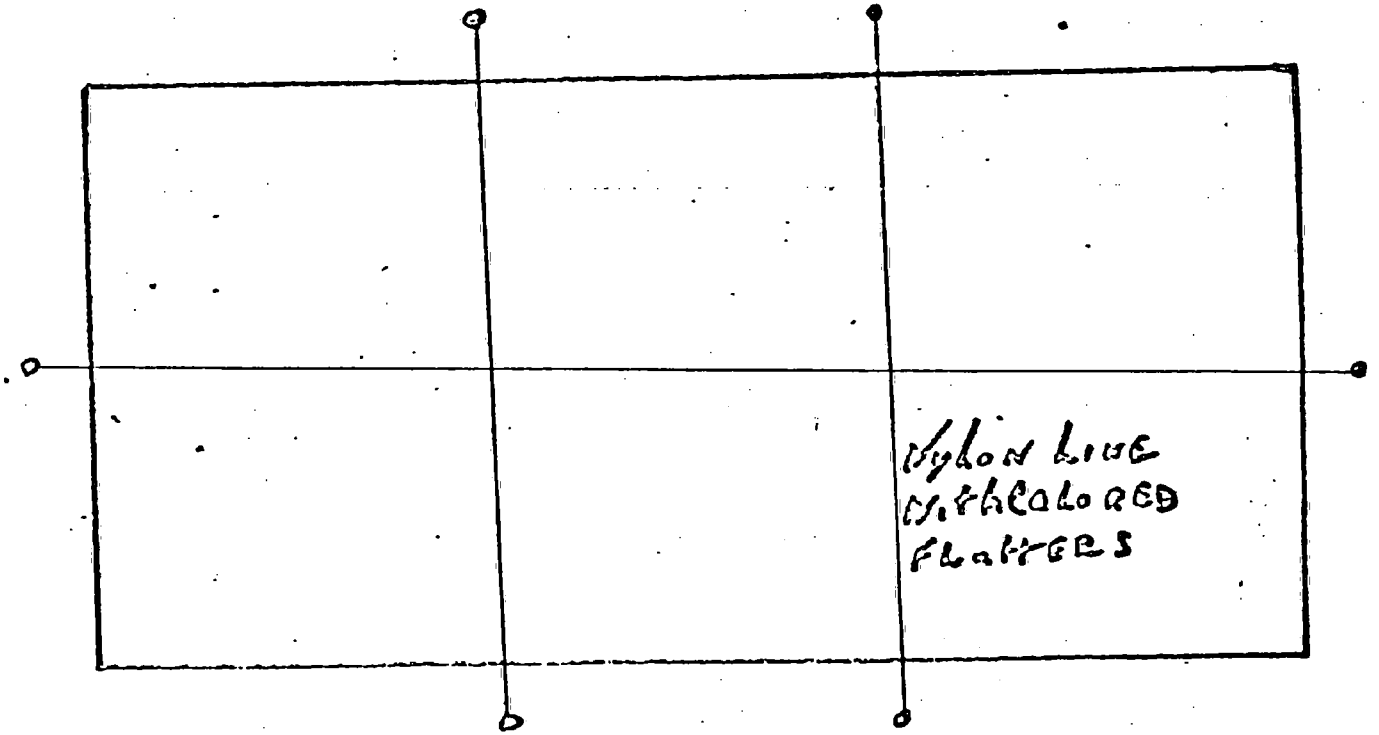
Jack +



Wild Life Protection

Incl 4





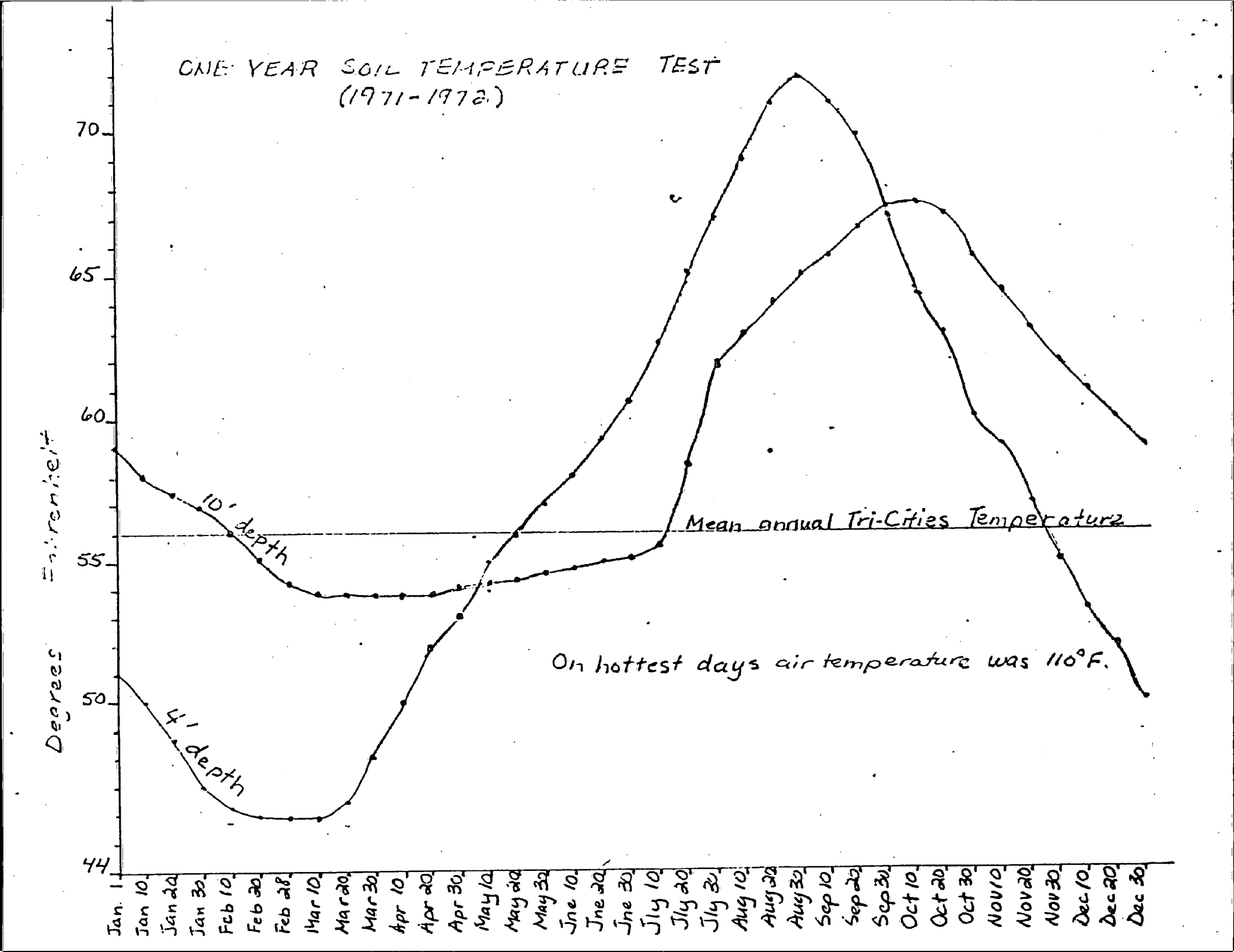

ONE YEAR SOIL TEMPERATURE TEST
(1971-1972)
Degrees Fahrenheit
70
65
60
55
50
44
10' depth
4' depth
Mean annual Tri-Cities Temperature
On hottest days air temperature was 110°F.
Jan. 1
Jan 10
Jan 20
Jan 30
Feb 10
Feb 20
Feb 28
Mar 10
Mar 20
Mar 30
Apr 10
Apr 20
Apr 30
May 10
May 20
May 30
Jne 10
Jne 20
Jne 30
Jly 10
Jly 20
Jly 30
Aug 10
Aug 20
Aug 30
Sep 10
Sep 20
Sep 30
Oct 10
Oct 20
Oct 30
Nov 10
Nov 20
Nov 30
Dec 10
Dec 20
Dec 30

EXHIBIT 3

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
SPOKANE, WASHINGTON

Permit No. 5301

In accordance with Chapter 90.48 RCW
A WASTE DISCHARGE PERMIT is issued to:

Date of Issue March 21, 1973

Date of Expiration March 21, 1978

Resource Recovery Corporation
P. O. Box 2431
Olympia, Washington 98507

Pasco Facilities

Prefatory Statement

The above applicant, hereinafter referred to as the "permittee," has requested permission from the Department of Ecology, hereinafter referred to as the "Department," to collect, transport to, and dispose of industrial, commercial, and agricultural wastes at the Pasco Disposal Site in Pasco, Washington, encompassing 250 acres within Section 15 and 22, Township 9 North, Range 30 East, W. M., Franklin County, in compliance with provisions of Chapter 90.48 RCW, Water Pollution Control Laws. Said activities shall be conducted in accordance with all applicable provisions thereof, along with those of Chapter 70.95, Solid Waste Management, and Chapter 173-301 WAC, a regulation relating to minimum functional standards for solid waste handling.

The aforementioned wastes are to initially consist of spent chemical solutions or concentrates thereof, which are to be stored in lined ponds or sealed containers for evaporation, concentration and possible ultimate recovery or destruction of the chemicals. It is the intent of the Department, and also the permittee, that there will be no discharge of wastes to any surface or ground waters from any phase of the operation.

This permit is being issued to insure adequate disposal of all wastes transported to the site as if they were there generated. It is also the intent of this permit to authorize a place of disposal for those types of wastes which presently enter surface or ground waters, municipal sewerage systems, storm sewer systems, or local solid waste sites in less than ideal conditions. As these sources of hazardous or toxic wastes are routinely examined for adequacy of disposal methods, a viable alternative exists to which these substances may be taken, thus eliminating those practices, procedures, and methods which have been practiced for lack of better alternatives.

Permit No. 5301

Resource Recovery Corporation
Pasco Facilities
Olympia, Washington

Date of Issue March 21, 1973

Date of Expiration March 21, 1978

Authorization

The permittee is hereby authorized to receive and dispose of on site industrial, agricultural, and commercial wastes in an amount not to exceed a yearly average of 5,000 gallons per day or a daily maximum of 25,000 gallons per day, subject to the following conditions:

A 1. Receipt of all wastes FOB the source shall require compliance of the permittee with all rules and regulations of the Department of Transportation.

2. Any spills, leaks, or overflows of any hazardous or toxic waste under the control of the permittee during any transfer from source to site, shall immediately be reported to the Department, if such spill, leak, or overflow did or will enter a surface water or drainway to same.

3. Any spills, leaks, or overflow of wastes mentioned in Condition A 2. shall be contained and removed to the extent possible. All oil spills shall be reported to the Department or United States Coast Guard.

4. Disposal is to be on that property described above, constituting a total of 250 acres presently leased or owned by the permittee.

5. All wastes received shall be recorded as to type, chemical composition (major), quantity, source, and method of disposal.

6. Monthly reports of the information gathered in Condition A 5. shall be submitted to the Department's Eastern Regional Office, Spokane, and to Benton-Franklin Health District, Richland.

7. Wastes received in sealed containers, or sealed in containers at the site for storage or burial, shall be monitored for leaks or ruptures, either visually or by subsurface moisture sensors.

8. Any containers found to be leaking upon arrival shall be resealed or placed in a sealed pond for storage.

9. Because of the great many variables encountered in industrial wastes and their adequate disposal, the permittee is hereby authorized to conduct research projects into the disposal of plating, wood treatment, and paint wastes, using various storage and/or evaporative basin lining techniques and procedures.

10. Additional projects involving wastes other than those mentioned in Condition A 9., may be conducted provided a proposal is first developed and submitted to the Department for review and approval, prior to full scale operation.

Permit No. 5301

Resource Recovery Corporation
Pasco Facilities
Olympia, Washington

Date of Issue March 21, 1973

Date of Expiration March 21, 1978

11. A monthly report shall be made to the Department of the plating, wood treatment and paint waste projects being investigated. This report shall include:
    a. the degree of liquid penetration in the soil for each type of liner studied,
    b. the degree of natural sealing due to solids accumulation or soil reaction, and,
    c. the degree of neutralization by the soil of acid wastes.

12. Ponds shall be located and constructed as per the enclosures to the permittee's waste discharge application.

13. Discharge to a pond shall be stopped at such time as a moisture sensor indicates penetration of liquid. An investigation of the cause shall be made and reported as per Condition A 6. if groundwater contamination is a likelihood.

B 1. Ponds shall be provided with a device arranged in a manner to prevent waterfowl from landing on any pond used for waste storage.

2. A sprinkler system shall be provided for dust control over those ponds allowed to dry out, if a problem should arise.

C 1. Monitoring of the site shall be accomplished through the use of test wells and moisture sensor units, as shown on Enclosure 1 of the permit application.

2. Moisture sensor locations shall be monitored on a daily basis.

3. Test wells shall be monitored on a weekly basis for presence of liquid; if found, tests will be made for pH, total chromium, pentachlorophenol, and oils, and other contaminants as may be deemed appropriate.

4. A monthly data summary of all monitoring activities shall be submitted as per condition A 6.

5. At any time the test well sampling data shows contamination to a phase of the permittee's operation, those affected projects shall be suspended until the cause can be determined and corrective measures proposed. A report shall be made as per Condition A 6.

6. Resumption of operations shall not begin until Departmental approval is given following review of the causes and corrections outlined in a report submitted as per Condition A 6.

D 1. At any time there arises a need to change or amend conditions of this permit, the Department and the permittee shall review the proposed changes for possible permit amendment.

Permit No. 5301

Resource Recovery Corporation
Pasco Facilities
Olympia, Washington

Date of Issue March 21, 1973

Date of Expiration March 21, 1978

E 1. In the event the permittee is temporarily unable to comply with any of the above conditions of this permit, the permittee shall immediately notify the Department by telephone and written report.

This permit does not allow the discharge of wastes other than those mentioned herein. A new application shall be submitted whenever a change in the waste to be discharged is anticipated.

This permit is subject to termination if the Department finds: (1) That it was procurred by misrepresentation of any material fact or by lack of full disclosure in the application; (2) That there has been a violation of the conditions thereof; (3) That a material change in quantity or type of waste disposal exists.

In the event that a material change in the conditions of the state waters utilized creates a dangerous degree of pollution; the Department may specify additional conditions to this permit.

Signed R. Jerry Bollen

R. JERRY BOLLEN, Assistant Director
Department of Ecology

March 27, 1973

Resource Recovery Corporation
P. O. Box 2431
Olympia, Washington 98507

Gentlemen:

Transmitted herewith is Waste Discharge Permit Number 5301, which has been issued in accordance with Chapter 90.48 RCW.

This permit is being issued to insure adequate disposal of all wastes transported to the site as if they were there generated. It is also the intent of this permit to authorize a place of disposal for those types of wastes which presently enter surface or ground waters, municipal sewerage systems, storm sewer systems, or local solid waste sites in less than ideal conditions. As these sources of hazardous or toxic wastes are routinely examined for adequacy of disposal methods, a viable alternative exists to which these substances may be taken, thus eliminating those practices, procedures, and methods which have been practiced for lack of better alternatives.

We thank you for your cooperation.

Sincerely,

THOMAS C. HAGGARTY
Regional Manager

TGH:JLA:eab
cc: Okey
Enclosure

EXHIBIT 4

DEC 10 1973

November 30, 1973

State of Washington
Department of Ecology

Honorable James W. Rogers, Chairman
and Board of County Commissioners
Franklin County Courthouse
Pasco, Washington 99301

Gentlemen:

You have long been aware of the problems of locating and operating a waste disposal site for industrial materials. The Department of Ecology recognizes that we share the responsibility for adequate disposal of these wastes. This agency has endeavored to carry out that responsibility through the issuance of a waste discharge permit.

Because of the problems encountered by Resource Recovery Corporation on private land, both in Franklin and Benton Counties, it became apparent that we should look for public land. I have, therefore, instructed my staff to look for alternate state or federal lands. It may take some time to find an adequate site. During this interim period, the Pasco site will be of extreme importance, not only to those industries with contracts for disposal with Resource Recovery Corporation, but also to the state from a regulatory standpoint.

Although the Department's "discussion draft" of the investigative report of the site has not yet been finalized, the indications are that the present operation poses no threat to the environment. The draft has been reviewed by both the Departments of Agriculture and Social and Health Services with but minor changes recommended in operating procedures. The ban on the import of 2,4-D sludge to the Pasco site would, however, remain in effect during this interim period.

Because of these preliminary conclusions in our report and the need to adequately dispose of these wastes, I urge you to give consideration to allowing the site to operate on an interim basis until negotiations for a state controlled site can be finalized. During this period, this Department will carry on an adequate monitoring and surveillance program and accept full responsibility for the prevention of any environmental hazards resulting from the operation.

I believe this offers a workable solution to this problem and respectfully ask for your consideration of my request.

Sincerely,

John A. Biggs
Director

JAB:jcw

EXHIBIT 5

Resource Recovery Corporation

Industrial Waste Disposal Site Evaluation

Prepared
and
Published
by

Washington State
Department of Ecology

Assistance by

Franklin County Commissioners
Benton-Franklin District Health Department
State of Washington Department of Agriculture
State of Washington Department of Social
and Health Services

First Draft November 1973
Final Draft December 1973

Resource Recovery Corporation
Industrial Waste Disposal Site
Evaluation

TABLE OF CONTENTS

FIGURES

TABLES

I. INTRODUCTION

A. History

Over the last several years, there has been an ever increasing need in the State to provide for adequate solid waste handling facilities for industrial wastes.

The need for such facilities are reflected by:

1. The continuous inquiries we and local government receive from industry regarding means to adequately dispose of their wastes to conform to existing State and local laws and regulations.

2. The lack of existing adequate disposal sites to handle industrial wastes.

3. The precipitation of increasing volumes of industrial wastes being disposed of on LAND, due to the increasing need to remove these wastes from water and air effluents.

4. All emergencies concerning hazardous and routine industrial waste disposal are presently handled as the need arises. This includes the clean-up and disposal of spills and accidents of such types of wastes as calcium arsenate, phenolic resins, and parathion, to name a few. The Department has handled approximately 53 of these cases during the past year. The problem of disposing of these wastes becomes even more acute when one is faced with the lack of adequate disposal sites in Western Washington, due to predominantly heavy rains and high ground water.

In an effort to address the current state-wide problem of industrial and hazardous waste disposal, the Department is providing technical assistance, guidance, and support to local government and industry on proposed disposal site locations.

The technical assistance provided for disposal site locations has been mainly centered on the eastern side of the State, due to its low rainfall, adequate soils and geology, and low ground-water tables. Disposal site locations have been considered in the area of the Hanford Reservation at Badger Junction in Benton County and the current site at Resource Recovery near Pasco.

The Department is also currently in the midst of conducting a state-wide survey on industrial and hazardous waste management. The data obtained from this survey will provide the necessary information for defining the management problems, including disposal for handling industrial and hazardous wastes. This comprehensive definition of industrial and hazardous waste management problems will provide the baseline for the development of a management system to handle these wastes.

The most recent process of gaining acceptance and approval of using specific locations on the basin disposal site property for industrial waste disposal was initiated by letter and operational plan, dated September 5, 1972, and submitted by Resource Recovery Corporation to the Benton-Franklin County Health District.

A response to this letter and pplan of operation from the Health District was transmitted back to Resource Recovery on November 2, 1972, advising them to proceed on an interim basis with their planned program, keeping the Health Department informed on a monthly basis as to the progress being made. The advice to proceed on an interim basis was given since a permit system was currently being developed at the time and the rules and regulations which were to be forthcoming would strictly govern the disposal activities as dictated by Resource Recovery's disposal plan.

On November 7, 1972, an application for a waste discharge permit was submitted to the Spokane office of the Department of Ecology from Resource Recovery Corporation for the purpose of obtaining a permit for the operational aspects of the industrial waste disposal site at Basin Disposal near Pasco, Washington, encompassing 250 acres within Sections 15 and 22, Township 9 North, Range 30 East, W.M., Franklin County.

The site is about 2 miles east of Pasco, 3 miles north of the Columbia River (Lake Wallula) and 2.6 miles northwest of the Snake River. Land surface elevation at the site ranges from approximately 395 feet above mean sea level (msl) to about 420 feet msl (average elevation is about 410 feet msl). The climate in the area is semiarid and average precipitation is 8 inches, with most of the precipitation occurring as rain and light snow during the winter months. The mean annual temperature is 56°F. Daytime temperatures often exceed 100°F during the summer. Annual evaporation potential is about 60 inches per year with about 80% of the evaporation occurring from May through October.

Subsequently, on March 27, 1973, a letter transmitting the Waste Discharge Permit issued in accordance with Chapter 90.48 RCW, was mailed to Resource Recovery Corporation, P.O. Box 2431, Olympia, Washington 98507.

On August 2, 1973, a meeting was called by the Department of Agriculture to discuss the disposal of 2,4-D sludges at the Resource Recovery site near Pasco and to review the measures the Department of Agriculture had undertaken to minimize damage to grapes from 2,4-D application.

There was considerable discussion concerning the desirability of having a site for proper disposal of pesticides and other toxic materials. It was agreed that such a disposal site must not be a danger to the agriculture of the area. It was the consensus that it was technically feasible to operate an industrial disposal site and not cause a problem to the ecology of the area.

It was agreed that representatives of Agriculture, Ecology, and local health officials would meet to outline a course of action.

On August 9, 1973, representatives from the Department of Agriculture, Department of Ecology, Resource Recovery Corporation, and the Benton-Franklin Health District held a field investigation and meeting at the Resource Recovery site.

As a result of this meeting a work plan was issued for the complete 2-4-D waste handling, both enroute to and at the disposal site.

In the latter part of August, 1973, the Franklin County Commissioners became concerned as to the disposal of industrial waste at the Resource Recovery site near Pasco. On September 18, 1973, Mr. John Arnquist of the Department met with the County Commissioners and other interested people to discuss their concerns.

Based on the concern he had about the potential effects of some of the materials buried at the site, the Director of the Department of Ecology, Mr. John Biggs, ordered a full investigation of the Resource Recovery industrial waste disposal site on September 25, 1973. He assigned an investigation team to give it top priority.

On October 10, 1973, representatives from the Department of Ecology met in Pasco with a member of the Benton-Franklin Health District to scope the Resource Recovery investigation and to take a tour of the disposal facility.

On October 23, 1973, an investigation was made as to the current conditions at the site, the types of wastes disposed of at the site, and their potential impact on ground water and air contamination. Additional information was collected on October 30 and 31, 1973, to complete the field investigation of the site.

II. CURRENT CONDITIONS AT SITE

A. Waste Disposal at Site

The current conditions and waste inventory at the site are illustrated via the attached map (Figure 1) and inventory sheet (Table 1). The numbered statements on the inventory sheet refer to the location on the map having the same number.

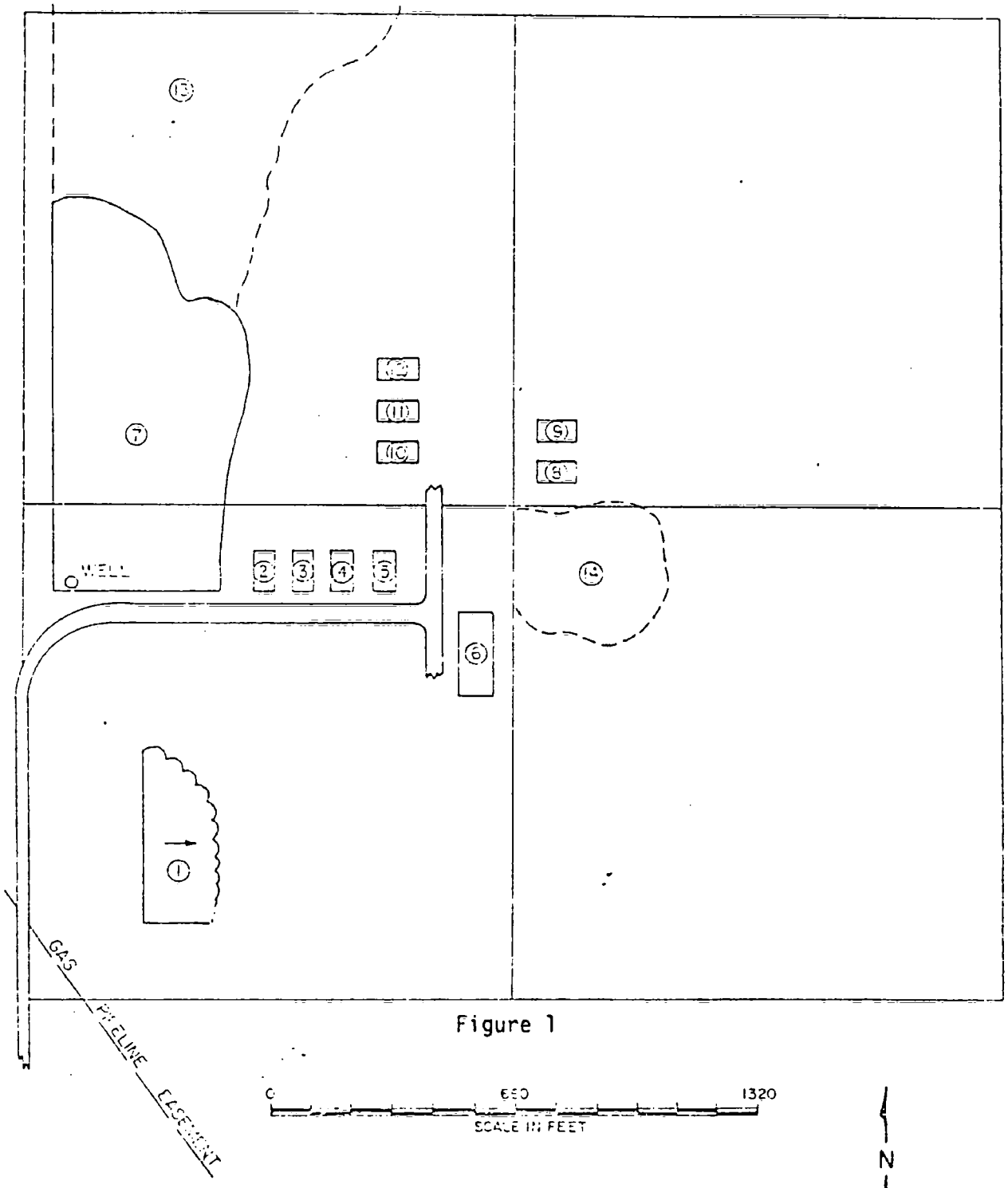


Figure 1

Table I

RESOURCE RECOVERY INC.
Pasco Facility
Inventory
as of
October 19, 1973

Location (See Map)	Description	Amount
1	For disposal of containerized wastes such as:	
	Paint wastes (sludge, pigments, resins, colors)	10,258 drums
	Empty pesticide containers	800 drums
	Wood treatment wastes	1,100 drums
	Etching solutions	160 drums
	Metal casting wastes	3,300 drums
	All wastes are in containers and buried under 5 feet of soil. There have been no known liquid discharges from this location.	
2	An unlined pond for evaporation of water from simple wastes such as:	
	Lime sludge and ammonia water	327,000 gal.
3	A lined pond for evaporation of water from: chrome plating wastes	8,790 gal.
4	A lined pond for evaporation of water from: miscellaneous liquids - not yet used to any extent	
5	A roughed out pond for later use. Being used as temporary storage for chlor-alkali sludge pending preparation of trenches 10, 11, and 12.	
6	For disposal of containerized herbicide wastes such as:	
	2,4-D tar	2,011 drums
	MCPA Bleed	3,037 drums
	other miscellaneous	435 drums
	The drums are covered with 5 feet of soil. There have been no known discharges from this location.	
7	The currently active landfill operation.	
8, 9	Unlined trenches for temporary disposal of chlor-alkali sludge. The sludge will be moved to lined trenches 10, 11, and 12.	
10, 11, 12	Proposed site for disposal of chlor-alkali sludges. The lined trenches will be constructed as outlined in Figure 2.	
13, 14,	Space for future landfill operations.	

A. Waste Disposed At Site

1. Herbicide Wastes

The phenoxy herbicides and, particularly, 2,4-D and MCPA are widely used for the control of weeds in agriculture. Reactions in the synthesis of these herbicides are essentially the same. The waste mixtures contain various phenols and phenoxy acetic acids as their sodium salts. Descriptions of 2,4-D and MCPA are given in Tables 2 and 3.

In order to evaluate the environmental dangers associated with these products, the persistence, hazard to health and hazard to plants will be examined.

Persistence

Some type of chemical or biological reaction is necessary to degrade or alter the herbicide waste mixtures. Soil microorganism are able to degrade the wastes at relatively high rates of application. Adsorption of the herbicides on soil also minimizes the potential for the chemicals to leave the site.

Phenoxyacetic herbicides do not exist from one growing season to the next when used in normal agricultural rates. The degradation is considered to be primarily microbiological in nature. The literature indicates 2,4-D persists no more than a few weeks at normal use rates. MCPA may last up to three months. The soil microorganisms adapt to the herbicides and utilize it as a carbon source.

If the sealed herbicide containers leak, the herbicide is tied up by particles in the soil. This adsorption on soil particles reduces the possibility of leaching the chemical through the soil profile.

In summary, the herbicides are easily absorbed on soil and decomposed by microorganisms in the soil.

Hazard to Health

The toxicity of the phenoxy herbicides to mammals is relatively low. The approximate dose of 2,4-D to cause the death of a 150 pound man would be about 2-2/5 tablespoons. By way of comparison, a similar dose of aspirin is usually fatal.

There is little hazard to health because of the relatively low toxicity and biodegradable nature of the chemicals.

Hazard to Plants

Volatility is considered one of the hazardous aspects of using and disposing of volatile 2,4-D type herbicides. The 2,4-D is converted to the gaseous phase and the movement of the herbicide takes place in this vapor form. Beans, grapes, lentils, tomatoes, and other broad leaf crops are very susceptible to the herbicide vapors.

TABLE 2

DESCRIPTION OF 2,4-D

Common Name:	2,4-D
Trade Names:	Several
Chemical Name:	(2,4-dichlorophenoxy) acetic acid
Manufacturers:	The Dow Chemical Company, Rhodia Incorporated-Chipman Division, Amchem Products, Incorporated
Formulations:	Numerous acids, salts (amines usually) and esters. Sold as liquids, water soluble powders, dusts (seldom used due to drift hazard), granules, and pellets
Type of Herbicide:	A selective foliar absorbed, translocated phenoxy herbicide used mainly in postemergence applications
Physical Properties:	White solid (acid), clear to dark amber or brown liquid formulations, varied water solubility, aromatic odor
Acute Toxicity:	LD_{50}-500 mg/kg. Approximate dose to cause death of 150-pound man-2 2/5 tablespoonsful
Volatility:	Low to high volatility (amine-ester)
Use Precautions:	1. Flammability: Aqueous, nonflammable. 2. Corrosiveness: Noncorrosive. 3. Recommended method of cleaning: Wash thoroughly with water and detergent solution. Alcohol or ketone type solvents may be used if available. Equipment should preferably not be used for application of other pesticides or fertilizers. 4. Estimated shelf life: Most formulations have no shelf life limitations and are insensitive to light and temperature.
Remarks:	2,4-D is effective against many annual and perennial broadleaf weeds. The ester formulations are the most volatile and the amines least volatile. Plants are most susceptible when they are young and growing rapidly.

TABLE 3

DESCRIPTION OF MCPA

Common Name:	MCPA
Trade Names:	Several
Chemical Name:	[(4-chloro-o-tolyl)oxy] acetic acid (2-methyl-4-chlorophenoxyacetic acid)
Manufacturers:	Rhodia Incorporated-Chipman Division, Amchem Products, Incorporated, The Dow Chemical Company
Formulations:	2 and 4 lb/gal soluble and emulsifiable concentrates
Type of Herbicide:	A postemergence selective, translocated phenoxy herbicide
Physical Properties:	Brown liquid with a high water solubility (270,000 ppm)
Acute Toxicity:	LD_{50}-700 mg/kg. Approximate dose to cause death of 150-pound man-3 3/10 tablespoonsful
Volatility:	Low volatility
Use Precautions:	1. Recommended method of cleaning: Same as 2,4-D. Thorough washing with detergent and rinsing with water. 2. Estimated shelf life: Amine salt stable indefinitely. Ester shelf life varies with formulation.
Remarks:	This material is less toxic and more selective than 2,4-D.

The probability of air contamination section summarized the operating procedures which will prevent damage from volatilization of the herbicide. A 5-foot earth cover prevents volatilization. A second line of defense is the negatively charged soil which attracts the positively charged herbicide molecule.

The proper burial of the herbicide in sealed containers would eliminate the hazard to plants.

2. Paint Wastes

The paint wastes are normally composed of 50% resin, 20% water, 10% solvent, and the remainder pigments. The wastes are disposed of in containers.

Persistence

The heavy resin content of the wastes causes a sealing effect on the container. If the container should leak, the same sealing effect would allow little, if any, penetration into the soil. Sealing of the container or soil would prevent the materials from moving out of the disposal area.

Hazard to Health

Paint wastes pose little, if any, hazard to health. The immobility of the material combined with the low toxicity causes little, if any, danger to health.

Hazard to Plants

Paint wastes, as disposed of at the site, pose little or no danger to plants.

3. Wood Treatment Wastes

The wood treatment wastes contain 80 to 90% water, 10 to 20% wood flour (saw dust), and the balance chlorinated phenols. The description of pentachlorophenol (PCP), the major contaminant, is given in Table 4.

Persistence

Pentachlorophenol is resistant to chemical and biological degradation. Because the product breaks down so slowly, disposal should be confined to burial in sealed containers or evaporation from sealed ponds.

Hazard to Health

PCP is considered to have a moderate toxicity towards mammals. The low volatility would prevent the material from being an air pollutant. Very low levels in water (0.5 mg/L) have caused serious damage to fish and other aquatic organisms.

TABLE 4

DESCRIPTION OF PCP

Common Name:	PCP
Trade Names:	Several
Chemical Name:	Pentachlorophenol
Manufacturers:	Monsanto Company, The Dow Chemical Company
Formulations:	85 and 88% wettable powder, 5, 21, and 41% solutions, and 40% flakes
Type of Herbicide:	A contact herbicide applied both preemergence and postemergence as well as an insecticide and fungicide
Physical Properties:	White (pure form), light green granules with a low water solubility (20 ppm)
Acute Toxicity:	LD_{50}-78 mg/kg. Approximate dose to cause death of 150-pound man-1 teaspoonful
Volatility:	Low volatility
Use Precautions:	1. Flammability: Non flammable. 2. Corrosiveness: Noncorrosive. 3. Recommended method of cleaning: Rinse thoroughly with water. 4. Estimated shelf life: 4 months shelf life.
Remarks:	This material is also used as a wood preservative. Corrosive to rubber.

Care should be taken to keep the product out of surface and ground waters.

Hazard to Plants

In addition to being used as a wood preservative, pentachlorophenol is used as a contact herbicide, an insecticide, and a fungicide. The chemical has been used extensively because of its long-term effectiveness (persistence).

This waste is disposed of in sealed containers or evaporated from sealed ponds or tanks. After the evaporation pond becomes filled with solids as a result of evaporation, the pond will be covered with backfill. The backfill will be contoured to provide runoff of rainwater.

4. Chlor-alkali Sludge

The manufacture of chlorine and sodium hydroxide (alkali) produces an insoluble sludge as a byproduct. The sludge contains about 50% water and the remainder contains small amounts of calcium carbonate, magnesium hydoxide, barium sulfate, and small amounts of mercury.

Persistence

The dried chlor-alkali sludge is inorganic in nature. The major concern is the contamination by about 50-60 ppm of mercury. Inorganic mercury is itself quite toxic but it can be biologically converted to methyl mercury which is very toxic. The biological conversion to methyl mercury can be prevented by protecting the sludge from moisture. Figure 2 is a schematic diagram of the disposal trenches used to store the sludge. A synthetic liner is used on the top and bottom to protect the sludge from moisture. Sensors, which detect the presence of moisture, are placed below the liners. If the sensors should detect moisture, preventive actions can be taken to insure the waste does not reach ground water.

Hazard to Health

As was stated earlier, inorganic mercury and methyl mercury are hazards to health. The accumulation of mercury in fish and other aquatic organisms has caused the greatest concern. If the waste is protected from moisture as outlined, there is little or no danger.

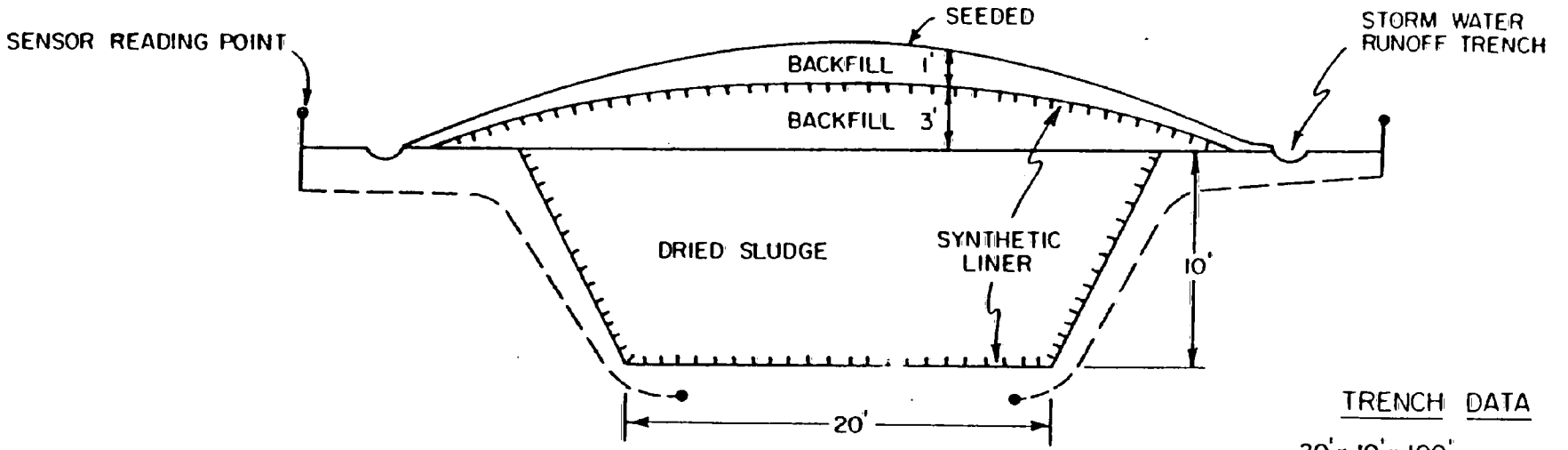
Mercury and its compounds has been used as a fungicide treatment on grain seed, mildewcide in paints, and as a preservative in many other products. If the sludge is handled as indicated, there should be no danger to plant life.

5. Metal Treating Wastes

Metal treating wastes include etching solutions and metal casting wastes are buried in sealed containers. Chrome plating wastes

SCHEMATIC DISPOSAL TRENCH DESIGN

END VIEW



TRENCH DATA

20' x 10' x 100'
CONTENT – 1500 TONS
WEIGHT – 150 lbs/cu.ft
LINER – TOP & BOTTOM
SENSORS – 4
TEST WELLS – 2 IN AREA

SIDE VIEW

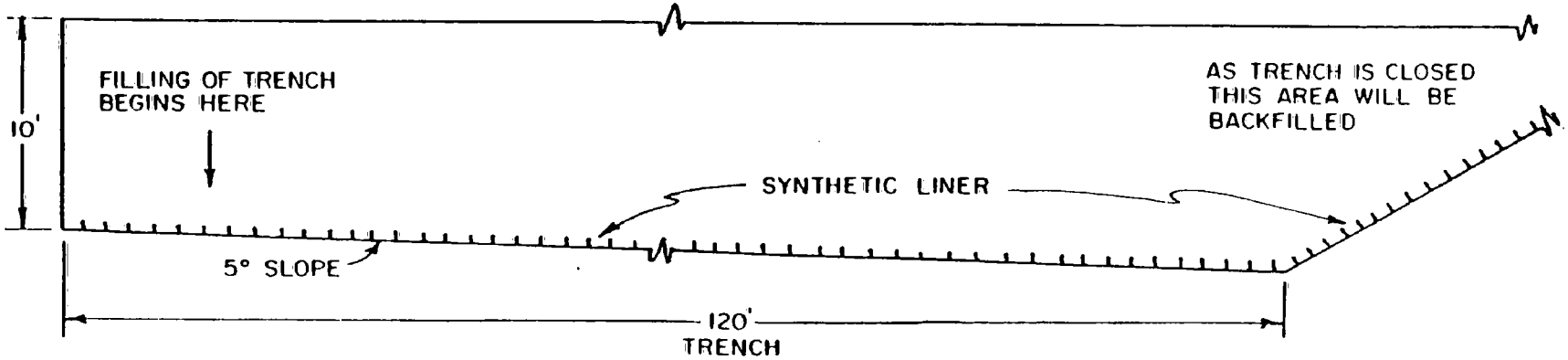


Figure 2

III. PROBABILITY OF GROUND-WATER CONTAMINATION

A. Geology and Hydrology

The geology and hydrology of the disposal site are known in a general way from several investigations that include the site as part of a broader study* and from a specific investigation by R. E. Brown.** The logs of existing wells give the best definitive information on the geology of the area.

The earth materials occurring on the surface of the ground at the disposal site consist of wind deposited (eolian) sands and silts at elevations at and above approximately 410 feet msl. The eolian deposits are formed into dunes that are fairly well stabilized by sparse vegetation. The eolian deposits are underlain by sands and silts of the Touchet formation from an elevation of about 410 feet to 370 feet msl. A zone of sandy gravel (Pasco gravels) occurs beneath the Touchet formation from 370 to approximately 350 feet msl. The Touchet formation and the Pasco gravels are called glaciofluvial sediments because they were deposited mainly by floods of glacial melt water.*** A series of highly variable lake and river deposited sands, silts, clays, and gravels known as the Ringold formation underlie the glaciofluvial deposits. The Ringold formation beneath the site consists of a medium sand from 350 feet to approximately 310 feet msl, sand and gravel from 310 feet to approximately 300 feet msl and silty clay from 300 feet msl to an unknown depth. The thick Yakima basalt sequence lies below the Ringold formation. The exact elevation of the basalt bedrock at the disposal site is not known as the existing well at the site does not penetrate the Ringold clay. However, data from adjacent wells indicate that the basalt is at an elevation of about 270 feet msl (140 feet below average land surface at the site).

Ground water beneath the disposal site occurs in the basalt sequence and in the overlying sedimentary materials. The disposal site will have a potential impact only on the ground water in the sedimentary zone. A comprehensive ground water study of the Columbia Basin was recently completed by the United States Geological Survey and the Department of Ecology.*** The study resulted in development of numerical models (computer models) of the ground-water system for the entire Columbia Basin Irrigation Project. The ground-water model of the Pasco Basin part of the Columbia Basin Project includes the Pasco waste disposal site. The model was used to determine response of ground-water levels at the disposal site.

* See items 1,2,3 on reference page.
** See item 4 on reference page.
*** See item 1 on reference page.
**** See item 3 on reference page.

Ground-water elevation (water table) beneath the site is approximately 355 msl (about 55 feet below average land surface), thus the surface of the ground water tops the Ringold sands and is in the Pasco gravels. The Pasco gravels transmit water much easier (higher permeability) than the Ringold sands, and ground-water velocities will be higher when the water table occurs in the gravels. Ground-water movement is in a general southerly direction toward the Snake and Columbia Rivers with the rivers serving as base level for the ground water.

Water table levels in the Pasco Basin are greatly affected by irrigation in the South Columbia Basin District. Figure 3 shows a computer generated ground-water hydrograph near the disposal site. The hydrograph shows the change in water table elevation from 1950 to present with extrapolation made to the year 2000. The elevation of the water table increased about 10 feet (from 345 to 355 msl) from 1964 to present, due to the start of irrigation in block 17 in 1964. The water table is expected to come up an additional 7 feet by 1990 and stabilize at an elevation of about 362 feet msl (about 48 feet below average land surface at the disposal site), if irrigated acreage and irrigation practices do not change in the south district. Burlington Northern intends to implement an extensive irrigation program (Desert Magic, Inc.) in the Pasco area. Irrigation water for this project will be obtained entirely from ground water. Figure 4 is a ground-water hydrograph that shows the expected change in ground-water level adjacent to the Pasco disposal site if the irrigation plans of Desert Magic, Inc. are put into operation. The data show that the average ground-water level at the disposal site will decrease by about 7 feet. Incorporating this change in the Figure 3 hydrograph means that the ground water will remain essentially at the 1973 level if the Desert Magic project is implemented.

Additional irrigation by imported water in the South District could cause an increase in the ground-water levels at the disposal site. However, it is doubtful that the water table would rise above the lowest part of the site if efficient irrigation is practiced. The irrigation on adjacent lands could cause a hazard from shallow, laterally moving water. On similar irrigated lands of the Columbia Basin Project and the Horse Heaven Hills area, lateral water movement has been observed when downward percolating drainage waters reach the surface of the stratified Touchet Beds. As much of the waste at the disposal site is in proximity to the Touchet surface, there is a danger of lateral flushing of wastes at depths considerably more shallow than those represented by the general water table which currently remains within the Pasco gravels. Irrigation development on adjacent lands should be accompanied by installation of moisture sensors on top of the Touchet surface upslope from the disposal site. At such time, developers also should be prepared to install an interceptor drain on top of the Touchet surface upslope, and/or a collector drain system on top of the same material downslope, from the site.

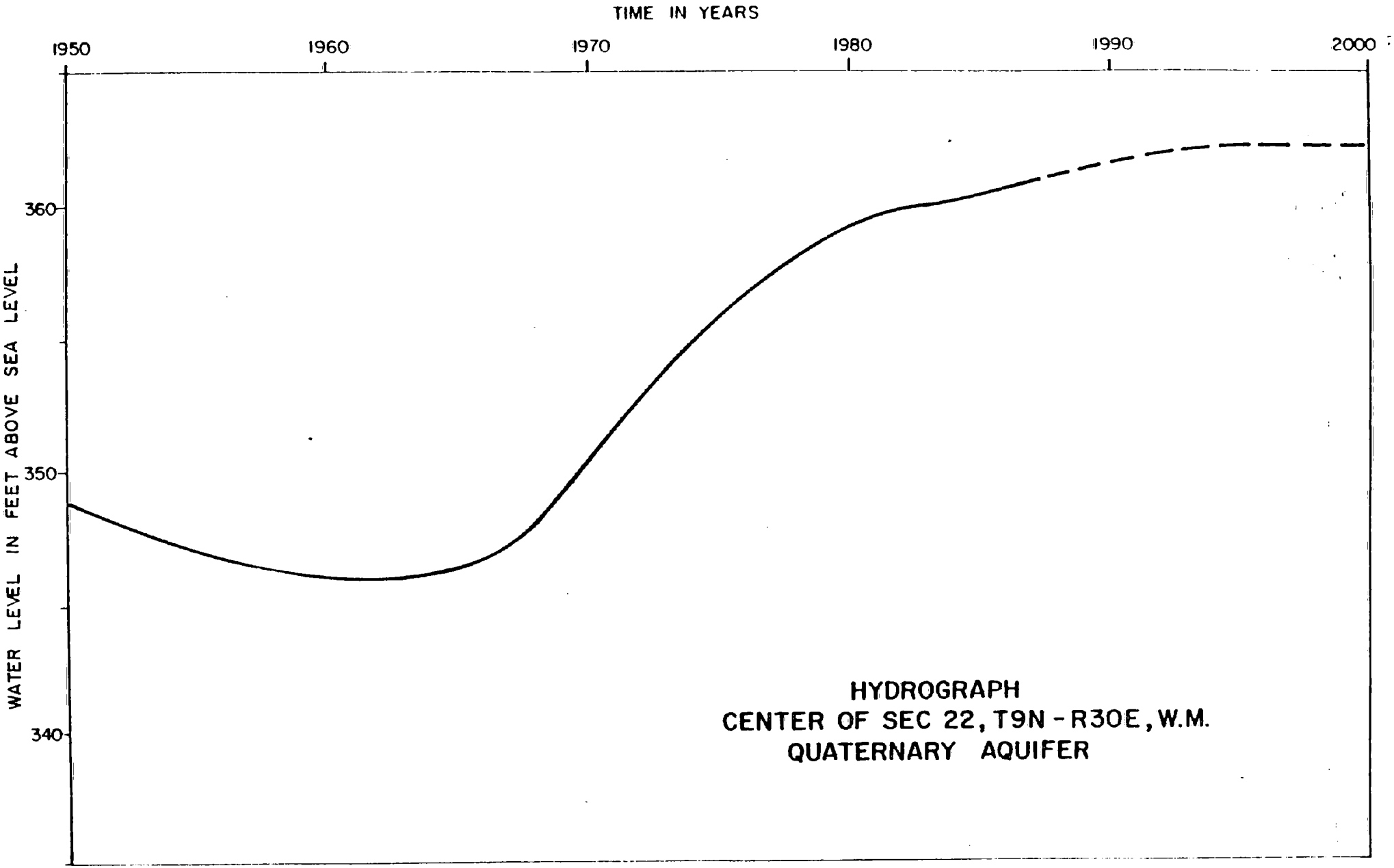

TIME IN YEARS
1950
1960
1970
1980
1990
2000
360
350
340
WATER LEVEL IN FEET ABOVE SEA LEVEL
HYDROGRAPH
CENTER OF SEC 22, T9N - R30E, W.M.
QUATERNARY AQUIFER

Figure 3

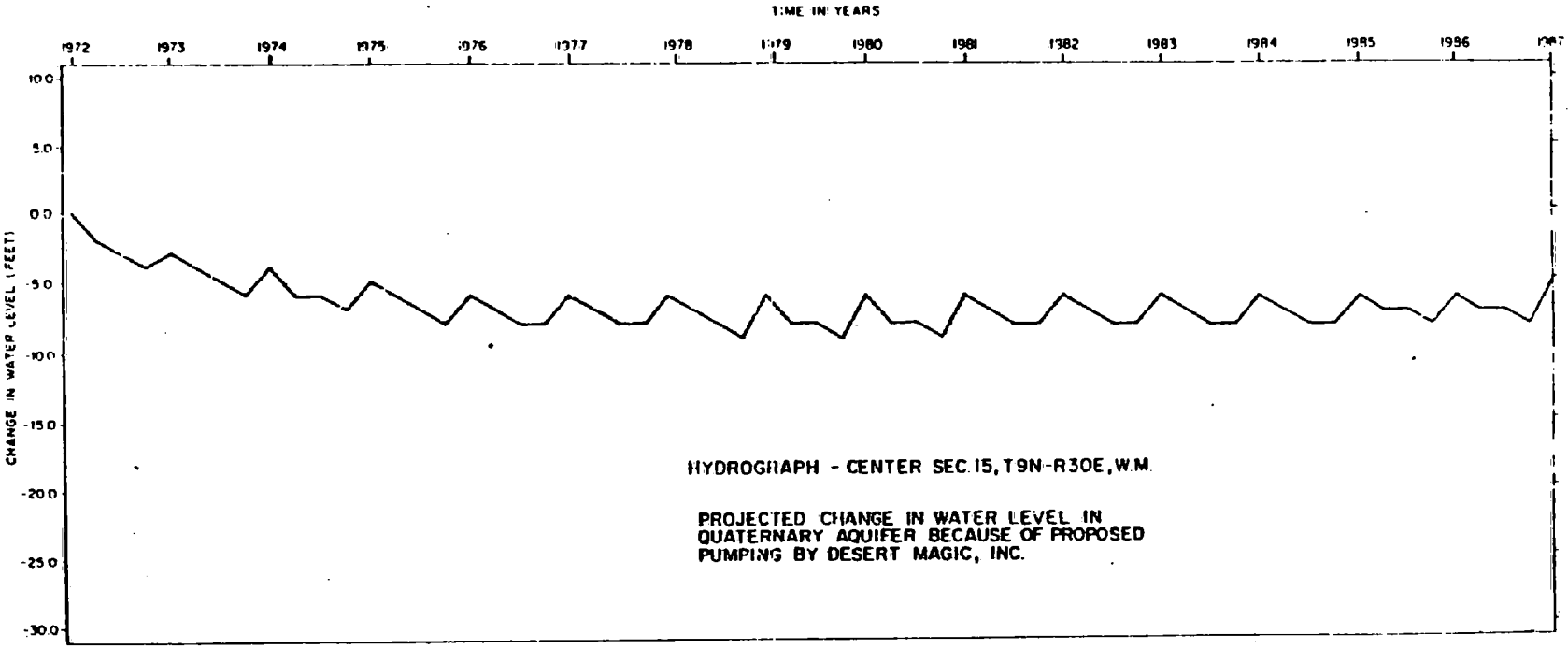

TIME IN YEARS
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
CHANGE IN WATER LEVEL (FEET)
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
HYDROGRAPH - CENTER SEC. 15, T9N-R3OE, W.M.
PROJECTED CHANGE IN WATER LEVEL IN QUATERNARY AQUIFER BECAUSE OF PROPOSED PUMPING BY DESERT MAGIC, INC.

Figure 4

B. Waste Disposal Considerations

The Pasco site is an excellent location for ground disposal of industrial solid wastes if the proper safeguards are observed. The arid climate with approximately 8 inches of annual precipitation prevents leaching of solid wastes disposed to the ground.* Thus there is little likelihood for migration of hazardous elements vertically through the ground to the water table or laterally to be exposed at ground surface at lower elevations. The climate and low humidity of the air is conducive to on-site concentration and desiccation of liquid wastes where a large surface area of the liquid is exposed to the atmosphere. However, it probably is not acceptable to dispose of liquid wastes directly to the ground in unlined pits or trenches. The water table is relatively shallow at the disposal site and there are no subsurface impermeable zones that will prevent movement of the liquid to the ground water; although the alternating, nearly horizontal layers of sands, silts, and gravels will tend to spread the liquid and impede downward percolation. The silt and sand will also remove some elements from the liquid by adsorption and ion exchange. Under a carefully controlled operation and proper research on soil/waste reactions, selected and limited liquid wastes could be disposed directly to the ground without adverse effects. Barring an approved research and operation program, liquid waste should only be disposed in impermeable pits and trenches.

*See Item 5 on reference page.

IV. THE PROBABILITY OF AIR POLLUTION

A. Methods of Disposal

A review of the methods prescribed to dispose of wastes was made in order to evaluate the probability of air pollution. Water solutions are emptied into ponds until the water evaporates. The dried residues may be recovered for reprocessing or buried until recovery is feasible. Chemical sludges, in solutions other than water, are buried in sealed containers. Each method will be discussed separately.

Evaporation Ponds

Potentially toxic water solutions are emptied into small (50' x 100' x 6') resin lined ponds. Simple water solutions are emptied into small unlined ponds. Water vapor is the only "air pollutant" from the ponds and no adverse environmental effects are anticipated.

Burial of Sealed Containers

Sealed containers of paint wastes, wood treatment wastes, etching solutions, and herbicide wastes have been buried at the site. The probability of an air pollution problem is greatest during transportation and burial of the wastes. There is less potential for a problem after burial. Each situation will be evaluated separately.

Transportation and Burial

The operators of the site have agreed that they would not accept drums of material that would cause air pollution unless they meet the following criteria:

They meet Department of Transportation (DOT) criteria for new containers.

There are no visible flaws in the containers.

The containers are properly labeled.

The containers have no visible leaks.

An expansion space is left in each container.

The outside of drums are adequately cleaned, after filling.

The operators have agreed that sludge from the manufacture of herbicides would not be transported from April 1 to September 1 of each year (see new recommendation, C2, page 23). This means that herbicide sludges would not be transported during that part of the year when plants are easily damaged by herbicides.

After Burial

Air pollution is no longer a problem after the sealed containers are buried under 5 feet of soil. Figure 5 summarizes a 1 year soil temperature test conducted in the Tri-cities area. Although the air temperature was as high as 110° F, the temperature at 4 foot depth attained only a temperature of 72°F. The cooler temperatures would prevent the material from evaporating to the atmosphere if the containers should leak. The adsorption of volatile pollutants on soil particles would be another safeguard against air contamination.

ONE YEAR SOIL TEMPERATURE TEST
(1971-1972)

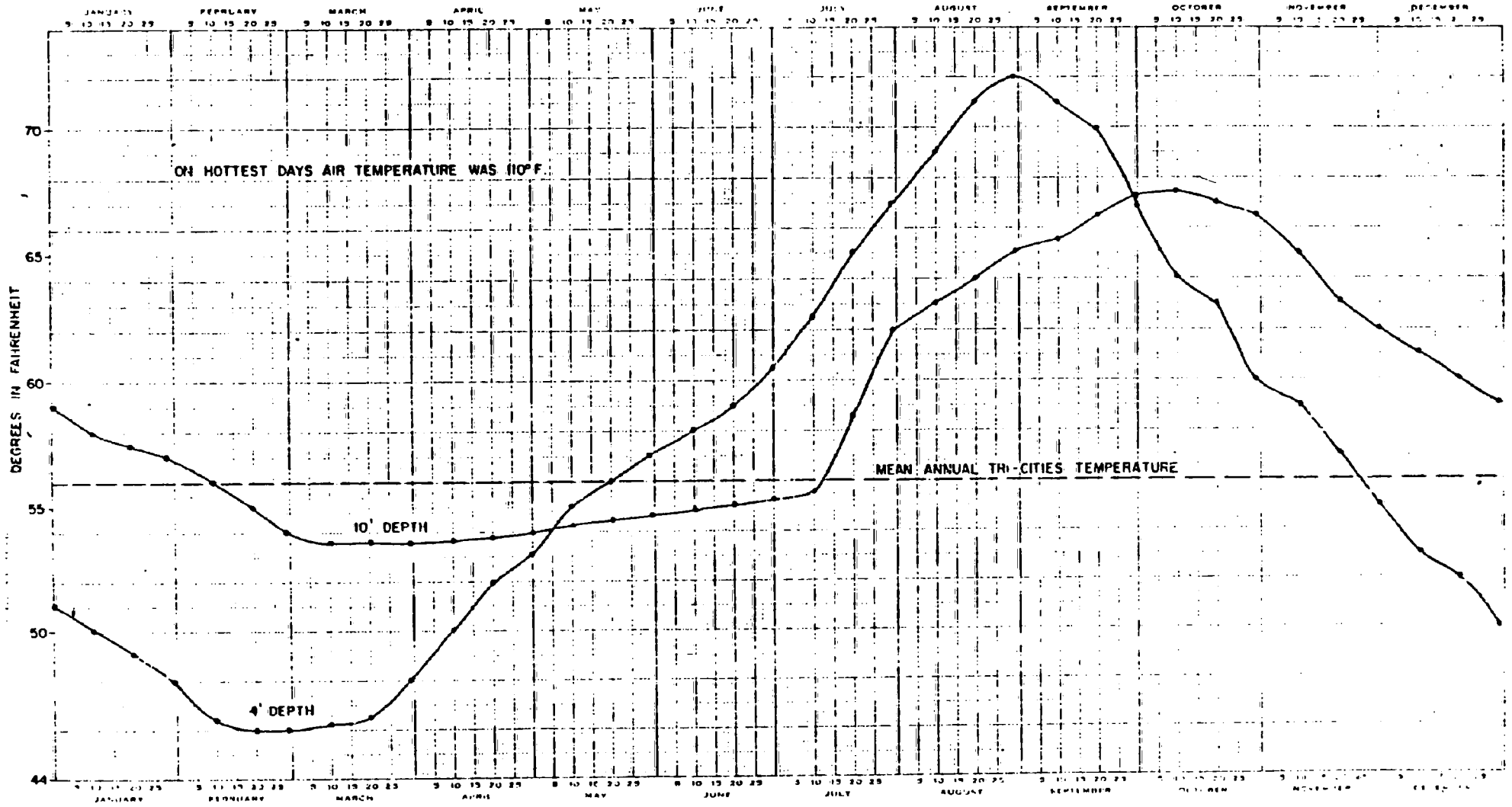


FIGURE 5

V. RECOMMENDATIONS

A. Operating Procedures

1. The operations should be conducted in accordance with provisions of:

   Chapter 70.95 RCW, Solid Waste Management Act
   Chapter 90.48 RCW, Water Pollution Control Laws
   Chapter 173-301 WAC, a regulation relating to minimum functional standards for solid waste handling
   Chapters 17.21 RCW, Washington Pesticide Application Act
   Chapter 15.57 RCW, Washington Pesticide Control Act
   Chapter 70.104 RCW, Washington Pesticides - Health Hazards

   Proposed Environmental Protection Agency rules for acceptance disposal and storage of pesticides and containers.

2. No material or no quantity of material shall be introduced to the management site which cannot be properly handled by the management resources available at the time of introduction. Judgment of this capability must be the consensus of site management personnel and officials of the appropriate public agencies.

3. Plans for the disposition of each material or class of material must be prepared by site managers and approved by the appropriate public agencies. Approval for storage should depend upon:

   a. Critical nature of problem
   b. A feasible, secure protocal for storage and inspection
   c. Probability of a timely ultimate disposal technology

4. All materials received shall be recorded as to type, chemical composition with emphasis in toxic or deleterious contents, source, process that produced the waste, and quantity.

5. Three samples will be taken of each material or class of material received. One sample will be available for analysis by an appropriate public agency; one will be available to the manager of the site for analyses, and one "referee" sample will be stored by an appropriate agency.

6. All management areas containing hazardous chemicals should be fenced, posted to all but authorized personnel, and under 24-hour surveillance.

7. The site operator should take and pass the State of Washington Pest Control Consultant's examination.

8. Abandoned disposal sites must be permanently monumented.

B. Water Pollution

1. Although there is little likelihood of migration of hazardous elements from sludges disposed directly to the ground in unlined trenches, the soil should be used as an additional safety factor. The trenches intended for disposal of hazardous solid wastes should, at a minimum, be lined with an impermeable layer of puddled clay (200 mesh bentonite or equivalent).

   Trenches intended for disposal of liquid wastes should be lined with an impermeable material with demonstrated compatibility with the intended waste. Sprayed on liners of plastic or resin are not acceptable, as they tend to crack and fail as the soil is mechanically loaded.

3. Waterfowl must be prevented from landing on or traversing ponds created by disposal of liquid wastes. Also, the solid waste disposal site should be protected from traverse by birds and animals.

4. Adequate monitoring of the site must be implemented with positive control made of types and amounts of wastes and disposal locations.

C. Air Pollution

1. Movement of airborn contaminants (particulate transport and movement of volatiles) must be prevented from both solid and liquid waste disposal areas.

2. The transport and disposal of herbicides should be curtailed whenever regulations pertaining to the use of such herbicides restrict the application of these products. Current regulations would allow the application of low volatile formulations from November 1 to approximately April 1 of each year. Transport and disposal of herbicide sludge should occur only during this period.

References Cited

1. Bretz, J.H., et al. Channeled Scablands of Washington: New Data and Interpretations. G,S,A, Bulletin V. 67, pp 957-1049, August, 1956.

2. Walters, K.L. and M. J. Grolier. Geology and Ground-Water Resources of the Columbia Basin Irrigation Project Area, Washington. Washington State Water Supply Bulletin 8, 1960.

3. Tanaka, H.H., et al. Digital-Model Study of Ground-Water Hydrology, Columbia Basin Irrigation Project Area. U.S.G.S. Open-File Report, 1973.

4. Brown, R.E. A preliminary Report on the Geology of the Pasco Storage Site. Unpublished Report, November 1972.

5. Unpublished Internal Reports - General Electric Co. and Battelle N.W., Richland, Washington.

EXHIBIT 6

May 14, 1974

Mr. Bruce Whitemarsh, Chairman
Franklin County Commissioners
County Courthouse
Pasco, Washington

Dear Chairman Whitemarsh:

At our meeting in the Commissioner's chambers in Pasco last week we discussed, among other things, requirements of the Department of Ecology in terms of closing down the Resource Recovery operation near Pasco.

Commensurate with those discussions, we are enclosing a document which sets forth provisions pertaining to the actual close down of the site in order to assure full protection from any potential environmental hazards. The monitoring program, which is to be conducted by the company, under supervision by this agency and the local health district, is to assure that no potential contamination will occur.

With these provisions, it is the view of the Department of Ecology that the area is fully protected from any water and air contamination from occurring after the operation is closed. We have discussed these provisions with the local health district and they are in agreement with our Department concerning these conditions.

Please contact me if you have any questions concerning this subject.

Sincerely,

R. Jerry Bollen

R. Jerry Bollen
Assistant Director
Office of Operations

RJB:ja

Enclosures

cc: Stan Vandetti, Benton-Franklin Health District, Pasco, Washington
George Heidlebaugh, Deputy Prosecutor, Franklin County
Bob Kimberly, President, Resource Recovery, Seattle, Washington
Crane Bergdahl, Attorney, P.O. Box 891, Pasco, Washington
John Arnquist, Eastern Regional Office, Spokane, Washington
Chuck Lean, Assistant Attorney General

Resource Recovery, Inc.
Pasco Disposal Facility
Requirements for Facility Closedown
and Site Monitoring

Prior to termination of operations at the Resource Recovery, Inc. Pasco Disposal Facility on or before January 1, 1975, the Corporation shall comply with the provisions of this order. The Department of Ecology will conduct site inspections during and after facility closedown to assure that satisfactory compliance measures are made.

Provisions

(see Figure 1 for Site Plan, Figure 2 for Lined Trenches, and Table 1 for Description)

Facility Closure

1. Backfill and covering -- Solid waste disposal sites (locations 1, 6, 10, 11, and 12) shall be covered with a minimum of 2 feet of soil and a 20 mil thick plastic sheeting (polyethelylene or equivalent) installed over the site. The synthetic liner shall extend at least 10 feet beyond the edges of the trench or pit. At least 3 feet of soil shall be placed over the liner. If the backfill extends above existing grade, the material will be contoured smoothly into the land surface.

Prior to site closure, all chlor-alkali sludge shall be moved from temporary storage (5, [illegible], 9) to the lined storage trenches (10, 11, 12) for permanent disposal.

Liquid wastes (2, 3, 4) will be evaporated to near dryness and the sites covered as per the solid waste site specifications.

2. Site Identification -- Each disposal facility shall be identified by a permanent monument placed adjacent to the west end of the individual pit or trench. The following data shall be stamped or engraved on the monument: (1) Facility number, (2) size (dimensions), (3) brief description of contained material(s), (4) amount of material (gallons, tons, drums, etc.) and container size (if contained), (5) dates of use.

3. Inventory -- An inventory of all wastes disposed to the Pasco Facility shall be submitted to the Department and to the local health departments. The inventory shall include details on the items noted on the monuments (using consistent site numbers) and, in addition, analytical data on the wastes and source of origin. Maps and the above statement of facts concerning the disposal area shall be recorded as part of the deed with the county auditor not later than three (3) months after the completion of operations. Records and plans specifying materials, location, and periods of operation shall be available for inspection. Areas used for the disposal of hazardous wastes shall not be sold or transferred without advanced notification of the jurisdictional health department and the Department of Ecology.

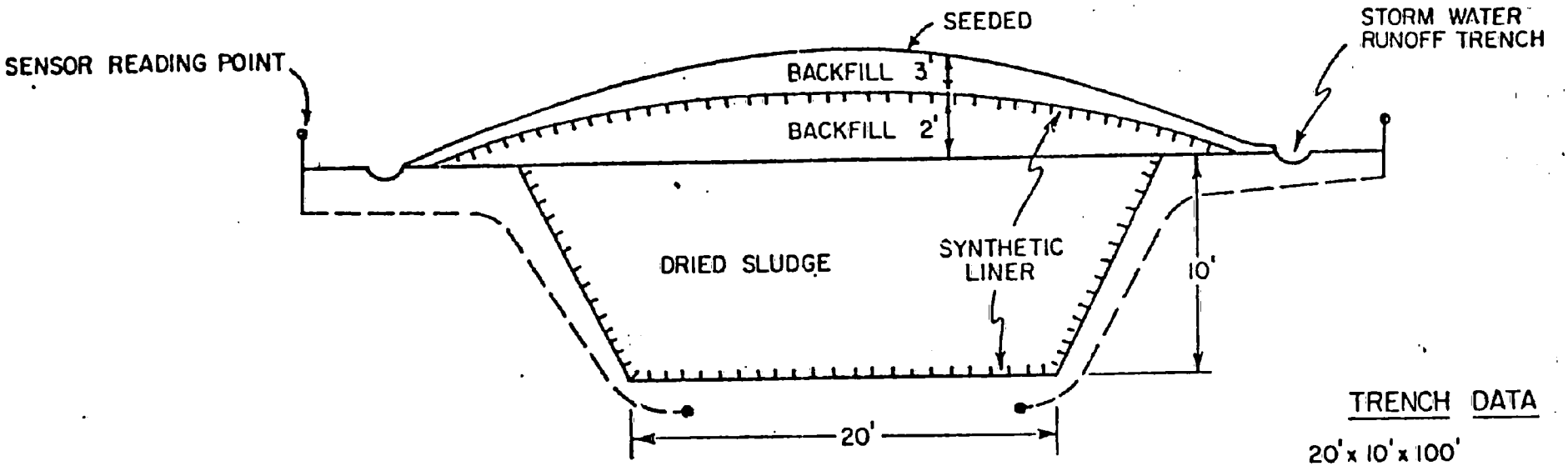
RESOURCE RECOVERY INC
Pasco Facility
Inventory

Table 1

Location (see map)	Description	Amount
1	For disposal of containerized wastes such as: Paint wastes (sludge, pigments, resins, colors)	10,258 drums
	Empty pesticide containers	800 drums
	Wood treatment wastes	1,100 drums
	Etching solutions	160 drums
	Metal casting wastes	3,300 drums
	All wastes are in containers and buried under five feet of soil. There have been no known liquid discharges from this location.	
2	An unlined pond for evaporation of water from simple wastes such as: Lime sludge and ammonia water	327,000 gal.
3	A lined pond for evaporation of water from: chrome plating wastes	8,790 gal.
4	A lined pond for evaporation of water from: miscellaneous liquids - not yet used to any extent	
5	A roughed out pond for later use. Being used as temporary storage for chlor-alkali sludge pending preparation of trenches 10, 11, and 12.	
6	For disposal of containerized herbicide wastes such as:	
	2,4,D tar	2,011 drums
	MCP a Bleed	3,037 drums
	other miscellaneous	435 drums
	The drums are covered with 5 feet of soil. There have been no known discharges from this location.	
7	The currently active landfill operation.	
8, 9	Unlined trenches for temporary disposal of chlor-alkali sludge. The sludge will be moved to lined trenches 10, 11, and 12.	
10, 11, 12	Proposed site for disposal of chlor-alkali sludges. The lined trenches will be constructed as outlined in figure 2.	
13, 14	Space for future landfill operations.	

SCHEMATIC DISPOSAL TRENCH DESIGN

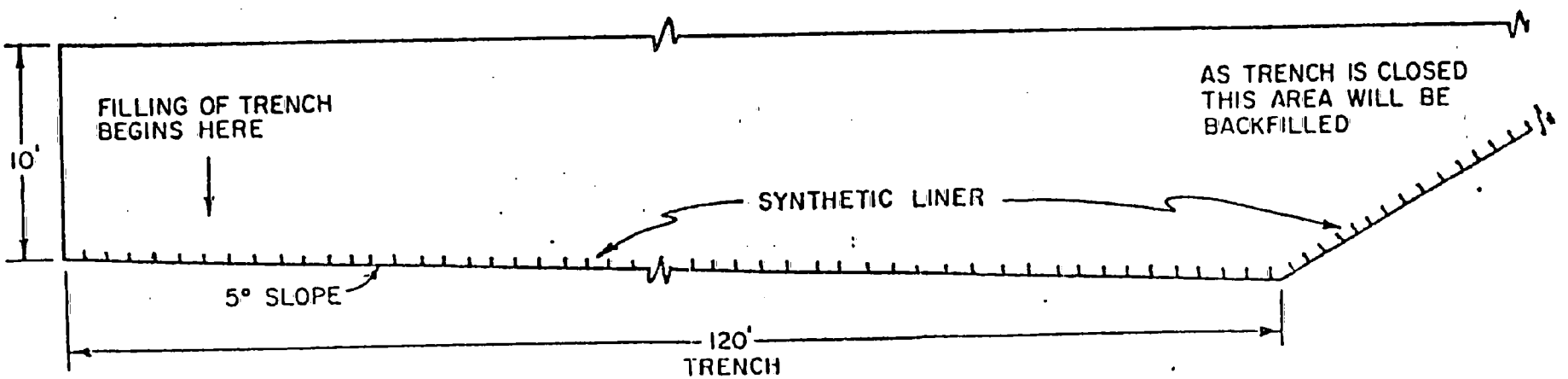
END VIEW



TRENCH DATA

20' x 10' x 100'
CONTENT – 1500 TONS
WEIGHT – 150 lbs/cu.ft.
LINER – TOP & BOTTOM
SENSORS – 4
TEST WELLS – 2 IN AREA

SIDE VIEW



At the end of the two year sampling period or at the time the Department of Ecology is fully satisfied that no potential exists for future contamination, the Company will be notified in writing and further monitoring will not be required.

Resource Recovery Corporation

5501 AIRPORT WAY SOUTH
SEATTLE, WASHINGTON 98108
PHONE (206) 767-0355

BRANCH OFFICE:
P. O. Box 650
Pasco, Washington 99301

September 30, 1974

Mr. Claude Sappington
Department of Ecology
East 103 Indiana Avenue
Spokane, WA 99027

Dear Claude:

I have reviewed the plan of action for close-down and site monitoring of industrial waste facility at Pasco. We are in agreement with the plan except for the following comments and suggested changes:

1. Isolation - Most of the fencing will not be completed until January in order to provide working space around the sites.

2. Backfill and Covering - We will start this in November. However, since it is my understanding with the Commissioners that we do not have to stop operations until December 31, 1974, we will not finish closing the site until January.

3. Liquid Waste - The same as for #2 above, except that the pits may not be dry until February or March which would restrict covering operations until then.

There should not be any problem complying with the rest of the schedule as laid out. Perhaps air, water and ground samples should be taken at once to provide some additional data for comparisons down the road.

I enjoyed meeting you and being part of the program at the seminar. Let me know when you want to get together in Pasco.

Sincerely,

RESOURCE RECOVERY CORP.

Bob

John R. Kimberly, Jr.
President

JRK/mam

December 20, 1979

Mr. Larry Dietrich
Resource Recovery, Inc.
420 E. Ainsworth
Pasco, WA 99301

Re: Industrial Waste Disposal Site Closure Agreement

Dear Mr. Dietrich:

I am writing to document the items we discussed during our meeting on December 4, regarding the provisions of the May 14, 1974, closure agreement. The following is in the format of the agreement:

FACILITY CLOSURE

1. Backfill and Covering - You informed me that the final three (3) feet of cover were never applied. You indicated that you intend to apply this cover as time permits. I am requesting that you complete this task for the specified areas no later than December 31, 1980.

2. Site Identification - I question the practicality of monumenting each disposal area. I am requesting that the site be professionally surveyed and mapped. The map should indicate the final locations of all wastes deposited at the site. At least one permanent monument should be established as a reference point. The monument should be permanently marked to include location references and indicate that the site was a hazardous waste disposal area. The survey must be certified by a professional land surveyor and properly recorded with the county auditor as a part of the deed.

3. Inventory - A final inventory of wastes must be referenced to the above survey and also filed with the auditor. This inventory must include the locations, quantities and composition of the materials deposited at the site.

   It is our intent that the survey and referenced inventory provide a comprehensive and accurate picture of the site upon final closure. Filing with the county auditor will insure a permanent record of the site is established. I am requesting that the survey and inventory be filed no later than July 31, 1980. Please provide us a copy of the survey and inventory prior to filing for review.

4. Isolation - The fence referenced in the agreement was never constructed. No problems have been experienced without the fence and it is my opinion that it is no longer required. You are hereby relieved of that requirement.

Mr. Larry Dietrich
Resource Recovery, Inc.

MONITORING

Water - We will conduct an initial ground water monitoring survey to determine if any problem has appeared since closure of the site. The results of this survey will dictate any further action on our part.

Air - No air pollution problems have been reported at the site. We do not intend to conduct any air sampling at the present time.

Soil - No further soil monitoring will be required.

These requirements are what we feel are minimum. It is our opinion that the ground water monitoring will be a key indicator in the evaluation of the site. It is possible the additional monitoring wells into ground water may be required as I mentioned during our December 4, meeting.

Please contact me if you have any questions regarding the above.

I have enclosed a State Waste Discharge Permit application and related documents for the expansion of your septage disposal area. Please contact Phil Williams regarding the matter if you have any questions.

Sincerely,

James L. Malm
Environmental Quality Division

JLM:adh

Enclosures

cc: Mr. Tom Cook/DOE, Olympia
Mr. Bob Kimberly, President/Resource Recovery, Inc., Seattle
Mr. Stan Vendetti/Benton-Franklin Health District, Richland

EXHIBIT 7

DEPARTMENT OF ECOLOGY

IN THE MATTER OF THE COMPLIANCE BY)
PASCO SANITARY LANDFILL, INC.)
with Chapter 90.48 RCW and the)
Rules and Regulations of the)
Department of Ecology)

ORDER
No. DE 86-E112

To: Mr. Larry Dietrich
Pasco Sanitary Landfill, Inc.
P. O. Box 424
Pasco, WA 99301

RCW 90.48.020 defines underground waters as waters of the state. RCW 90.48.080 provides that it shall be unlawful for any persons to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drain, allowed to seep, or otherwise discharge into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the Director.

The Pasco Sanitary Landfill is a solid waste disposal facility which has been in operation since 1971. Prior to 1971, the site was known as the Basin Disposal Company dump site and was owned and operated by John Dietrich as a municipal solid waste open burning dump. In 1971, a company known as Resource Recovery Corporation was formed, with the Basin Disposal Company being part owners. A portion of the landfill was leased by Resource Recovery and operated by Larry Dietrich as a regional industrial waste disposal site. Barrels of paint manufacturing wastes, herbicide manufacturing wastes, metal finishing wastes, caustics, and acids were disposed of at the site between early 1972 and December, 1974. Resource Recovery disposal activity ended in 1974. In 1981, Larry Dietrich took over as owner and operator of the sanitary landfill.

In 1985, the Environmental Protection Agency (EPA) conducted a field investigation of the Pasco Sanitary Landfill focusing on the disposal areas operated by Resource Recovery. The investigation was part of a nationwide dioxin study. Installation of nine new ground water monitoring wells, a one-time sampling of all monitoring wells and collection of soil samples were part of the study activities.

Several volatile organic compounds were detected in the ground water, including 1,1-Dichloroethylene, 1,1-Dichloroethane, Trans-1,2-Dichloroethylene, Chloroform, 1,1,1-Trichloroethane, Trichloroethylene, Tetrachloroethylene, Toluene, and Total Xylene, in violation of RCW 90.48.080. Concentrations of Trichloroethylene and 1,1,1-Trichloroethane exceeded EPA's proposed maximum contaminant levels.

In view of the foregoing and in accordance with RCW 90.48.120(2):

IT IS ORDERED THAT Pasco Sanitary Landfill, Inc. shall, upon receipt of this ORDER, take appropriate action in accordance with the following instructions:

1. Ground water monitoring wells identified in the EPA Report as EE-2, EE-3 and JUB-2 shall be sampled on a quarterly basis for the following compounds: 1,1-Dichloroethylene, 1,1-Dichloroethane, Trans-1,2-Dichloroethylene, Chloroform, 1,1,1-Trichloroethane, Trichloroethylene, Tetrachloroethylene, Toluene, Total Xylene, and primary and secondary drinking water metals.

2. Ground water monitoring wells identified in the EPA Report as EE-1, EE-4, EE-5, EE-6, EE-7, EE-8, EE-9, JUB-1, JUB-3, JUB-4, and JUB control well shall be sampled twice a year for the compounds in Item 1.

3. Ground water monitoring wells EE-2, EE-3, EE-4, and EE-5 shall be sampled twice a year for herbicides.

4. Static water levels in all the monitoring wells shall be measured and recorded on a quarterly basis.

5. Within thirty (30) days of receipt of this ORDER, submit to the Washington Department of Ecology, Eastern Regional Office (ERO), N. 4601 Monroe, Suite 100, Spokane, WA 99205-1295, for review and approval a ground water sampling plan, including methods of sample collection, sample preservation, a QA/QC plan, and identification of the laboratory that will perform the analytical requirements of Items 1 through 3.

6. Copies of sampling results shall be submitted to the department, ERO, within fifteen (15) days of being received by the owner/operator of the facility.

7. The monitoring schedule and monitoring locations will be reviewed following one year of sampling and may be adjusted at that time.

Any person who fails to comply with any provision of this ORDER shall be liable for a penalty of up to ten thousand dollars for each day of continuing compliance.

DATED at Spokane, Washington, this 10th day of October, 1986.

John L. Arnquist
Regional Manager
Eastern Regional Office
Department of Ecology
State of Washington

EXHIBIT 8

TABLE 1. CONTROL WELL ORGANIC SOLVENTS (ug/l)

CONTROL WELL DATE	1,1-DICHLORO ETHYLENE	1,1-DICHLORO ETHANE	TRANS 1,2-DICHLORO ETHYLENE	CHLORO-FORM	1,1,1-TRICHLOR OETHANE	TRI CHLORO OETHYLENE	TETRA CHLORO ETHYLENE	TOLUENE	TOTAL XYLENE
JUL-85 E&E	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
OCT-86	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
MAR-87 EPA	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
JUL-87	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.5	0.5
DEC-87	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
ACCEPTABLE LEVEL	400.0	N/A	270.0	100.0	1000.0	4.5	3.5	N/A	620.0
COMPLIANCE	YES	N/A	YES	YES	YES	YES	YES	N/A	YES

TABLE 2. WELL EE 2 ORGANIC SOLVENTS (ug/l)

WELL EE2 DATE	1,1-DICHLORO ETHYLENE	1,1-DICHLORO ETHANE	TRANS 1,2-DICHLORO ETHYLENE	CHLORO-FORM	1,1,1-TRICHLOR OETHANE	TRI CHLORO OETHYLENE	TETRA CHLORO ETHYLENE	TOLUENE	TOTAL XYLENE
JUL-85 E&E	5.0	15.0	9.0	3.0	70.0	65.0	32.0	2.5	2.5
OCT-86	6.0	13.0	10.0	2.0	60.0	46.0	22.0	0.5	0.5
MAR-87 EPA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
JUL-87	13.0	21.0		6	69.0	68.0	27.0	0.5	0.5
DEC-87	4.0	10.0	6.0	12.0	31.0	36.0	11.0	0.1	0.1
DRINKING WATER STD.	400.0	N/A	270.0	100.0	1000.0	4.5	3.5	N/A	620.0
LESS THAN D. W. STD.	YES	N/A	YES	YES	YES	NO	NO	N/A	YES

NOTE: 25.0 INDICATES VALUE IS REPORTED AS 1/2 THE DETECTION LIMIT
COMPOUND NOT PRESENT ABOVE DETECTION LIMIT

TABLE 3. WELL EE 3 ORGANIC SOLVENTS (ug/l)

WELL EE3 DATE	1,1-DICHLORO ETHYLENE	1,1-DICHLORO ETHANE	TRANS 1,2-DICHLORO ETHYLENE	CHLORO-FORM	1,1,1-TRICHLOR OETHANE	TRI CHLORO OETHYLENE	TETRA CHLORO ETHYLENE	TOLUENE	TOTAL XYLENE
JUL-85 E&E	25.0	64.0	25.0	25.0	420.0	480.0	2.5	230.0	63.0
OCT-86	170.0	470.0	330.0	66.0	2400.0	2400.0	110.0	1700.0	590.0
MAR-87 EPA	110.0	410.0	210.0	54.0	1500.0	1900.0	72.0	1600.0	600.0
JUL-87	130.0	300.0		47	1700.0	1700.0	58.0	1300.0	320.0
DEC-87	210.0	540.0	190.0	18.0	1200.0	1500.0	92.0	950.0	440.0
DRINKING WATER STD.	400.0	N/A	270.0	100.0	1000.0	4.5	3.5	N/A	620.0
LESS THAN D. W. STD.	YES	N/A	YES	YES	NO	NO	NO	N/A	YES

MCL 200

TABLE 4. WELL JUB 2 ORGANIC SOLVENTS (ug/l)

WELL JUB2 DATE	1,1-DICHLORO ETHYLENE	1,1-DICHLORO ETHANE	TRANS 1,2-DICHLORO ETHYLENE	CHLORO-FORM	1,1,1-TRICHLOR OETHANE	TRI CHLORO OETHYLENE	TETRA CHLORO ETHYLENE	TOLUENE	TOTAL XYLENE
JUL-85 E&E	13.0	35.0	15.0	17.0	168.0	164.0	2.5		
OCT-86	9.0	40.0	20.0	18.0	150.0	150.0	7.0	0.5	
MAR-87 EPA	14.0	26.0	15.0	14.0	67.0	110.0	4.0	0.5	0.5
JUL-87	10.0	22.0		14.0	56.0	76.0	2.0	2.5	
DEC-87	5	18	9	10	36	62	0.1	0.1	0.1
DRINKING WATER STD.	400.0	N/A	270.0	100.0	1000.0	4.5	3.5	N/A	620.0
LESS THAN D. W. STD.	YES	N/A	YES	YES	YES	NO	YES	N/A	YES

NOTE: 25.0 INDICATES VALUE IS REPORTED AS 1/2 THE DETECTION LIMIT
COMPOUND NOT PRESENT ABOVE DETECTION LIMIT

Burman Technical Services, Inc
Analytical Laboratories Division

5199 Community Road
P O Drawer 2609
Gulfport, MS 39505

601-863-3036

MAY 16 1988

Technico & Environmental Services
201 West 33rd Avenue
Kennewick, Washington 99336

ATTENTION: Mr. John Zillich

DATE SAMPLE RECEIVED: 4-14-88
MONTH COVERED: April, 1988
CLIENT NUMBER: 04091
SAMPLE NUMBER: 04710
SAMPLED BY: Client
FREQUENCY: As Requested
DATE: April 30, 1988

IDENTIFICATION: JUB Control

PARAMETER		UNITS
1,1-Dichloroethylene	<5	µg/l
1,1-Dichloroethane	<5	µg/l
Trans-1,2-Dichloroethylene	<5	µg/l
Chloroform	<5	µg/l
1,1,1-Trichloroethane	<5	µg/l
Trichloroethylene	<5	µg/l
Toluene	<5	µg/l
Xylene	<5	µg/l
Tetrachloroethylene	<5	µg/l

Karen H. Brown

KAREN H. BROWN
LABORATORY MANAGER

Burmah

Burmah Technical Services Inc.
Analytical Laboratories Division

15199 Community Road
P O Drawer 2609
Gulfport, MS 39505

601-863-3036

MAY 16 1988

Technico & Environmental Services
201 West 33rd Avenue
Kennewick, Washington 99336

ATTENTION: Mr. John Zillich

DATE SAMPLE RECEIVED: 4-14-88
MONTH COVERED: April, 1988
CLIENT NUMBER: 04091
SAMPLE NUMBER: 04711
SAMPLED BY: Client
FREQUENCY: As Requested
DATE: April 30, 1988

IDENTIFICATION: JUB 2

PARAMETER		UNITS
1,1-Dichloroethylene	<5	µg/l
1,1-Dichloroethane	15	µg/l
Trans-1,2-Dichloroethylene	<5	µg/l
Chloroform	6	µg/l
1,1,1-Trichloroethane	22	µg/l
Trichloroethylene	37	µg/l
Toluene	<5	µg/l
Xylene	<5	µg/l
Tetrachloroethylene	<5	µg/l

Karen H. Brown

KAREN H. BROWN
LABORATORY MANAGER

Burmah

Burmah Technical Services, Inc
Analytical Laboratories Division

15199 Community Road
P O Drawer 2609
Gulfport, MS 39505

601-863-3036

MAY 16 1988

Technico & Environmental Services
201 West 33rd Avenue
Kennewick, Washington 99336

ATTENTION: Mr. John Zillich

DATE SAMPLE RECEIVED: 4-14-88
MONTH COVERED: April, 1988
CLIENT NUMBER: 04091
SAMPLE NUMBER: 04713
SAMPLED BY: Client
FREQUENCY: As Requested
DATE: April 30, 1988

IDENTIFICATION: EE2

PARAMETER		UNITS
1,1-Dichloroethylene	250	µg/l
1,1-Dichloroethane	19	µg/l
Trans-1,2-Dichloroethylene	9	µg/l
Chloroform	<5	µg/l
1,1,1-Trichloroethane	33	µg/l
Trichloroethylene	45	µg/l
Toluene	<5	µg/l
Xylene	<5	µg/l
Tetrachloroethylene	16	µg/l

KAREN H. BROWN
LABORATORY MANAGER

Burman Technical Services, Inc.
Analytical Laboratories Division

15199 Community Road
P O Drawer 2609
Gulfport, MS 39505

601-863-3036

MAY 16 1988

Technico & Environmental Services
201 West 33rd Avenue
Kennewick, Washington 99336

ATTENTION: Mr. John Zillich

DATE SAMPLE RECEIVED: 4-14-88
MONTH COVERED: April, 1988
CLIENT NUMBER: 04091
SAMPLE NUMBER: 04714
SAMPLED BY: Client
FREQUENCY: As Requested
DATE: April 30, 1988

IDENTIFICATION: EE3

PARAMETER		UNITS
1,1-Dichloroethylene	<5	µg/l
1,1-Dichloroethane	250	µg/l
Trans-1,2-Dichloroethylene	50	µg/l
Chloroform	35	µg/l
1,1,1-Trichloroethane	480	µg/l
Trichloroethylene	1,000	µg/l
Toluene	600	µg/l
Xylene	220	µg/l
Tetrachloroethylene	70	µg/l

Karen H Brown

KAREN H. BROWN
LABORATORY MANAGER

EXHIBIT 9

Exhibit 9 will be delivered under separate cover.